IF WE BUILD IT, WILL THEY KNOW TO COME? MENTAL HEALTH LITERACY, THE HEALTH BELIEF MODEL, AND HELP SEEKING INTENTIONS

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

DOCTOR OF PHILOSOPHY

BY

KEVIN T. CANNON, M.A.

DISSERTATION ADVISOR: STEFANÍA ÆGISDÓTTIR, PH.D., HSPP

BALL STATE UNIVERSITY

MUNCIE, INDIANA

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ABSTRACT

DISSERTATION: If We Build It, Will They Know to Come? Mental Health Literacy, the Health Belief Model, and Intentions to Seek Help.

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Mental health disorders are highly pervasive worldwide and represent a significant proportion of the disease burden, with the World Health Organization projecting a continued increase in prevalence and burden for the foreseeable future. Despite the high need for mental health care and the availability of effective evidence-based mental health treatments, a significant proportion of individuals with high needs for mental health care never receive treatment, delay seeking care, or drop out of treatment prematurely. Thus, there is a significant need for research aimed at delineating the factors that inhibit and the factors that facilitate seeking mental health care. Guided by the health belief model (HBM) and the theory of planned behavior (TPB), the current study examined the role of health beliefs, mental health literacy (MHL), and sociodemographic variables in predicting intentions to seek mental health care. Structural equation modeling was used to compare two hypothesized models and one empirically derived model. One model contained only the factors hypothesized by the HBM, a second model specified the HBM factors as mediators of the relationship between MHL and intentions to seek help, and a third model specified an alternative arrangement of the HBM factors and MHL in predicting intentions to seek help. Model comparison analyses indicated the model containing

only the HBM factors was the optimally fitting model, with perceived benefits, perceived barriers, and self-efficacy as the strongest predictors of intentions to seek mental health care. Additional analyses suggested significant group differences between males and females, as well as between individuals with and without previous help-seeking experiences. Implications, limitations, and directions for future research are discussed.

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> The question of why potential clients do not become actual clients is considerably more complicated than is often recognized. Behind any potential episode of professional help is a background of perceptions, judgments, and actions, all moving the person toward or away from contact with services.
>
> -Snowden, Collinge, and Runkle (1982, p. 281)

If we build it, will they know to come? Mental health literacy, the health belief model, and help seeking intentions

The disproportionately low use of mental health care compared with rates of mental illness represents a significant public health concern. Decades of research examining help-seeking for mental health problems suggests that, while structural barriers exist, attitudinal and psychosocial factors are often more influential on an individual's decision to seek mental health care. A plethora of models have been developed in attempts to explain help-seeking behavior, resulting in significant conceptual overlap amongst proposed components, thus hindering valid comparisons of components across studies. This study utilized the theoretical framework of the health belief model (HBM) to test the relationship among variables hypothesized to influence intentions to seek mental health care: psychological distress, perceived threat of mental illness, perceived benefits and barriers to seeking help, general health motivation, self-efficacy in seeking mental health care, and mental health literacy. Structural equation modeling (SEM) was used to examine and compare the fit of a model with only HBM factors and a model integrating mental health literacy. Additionally, SEM was used to examine measurement and structural invariance in order to assess the moderating effects of gender, previous help seeking experiences, and level of distress.

Background

Mental disorders are pervasive across the globe and are among the leading causes of disease burden (Demyttenaere et al., 2004; Kessler et al., 2011; Kessler et al., 2007). Depression alone is one of the primary causes of disability (Cuijpers, de Graaf, & van Dorsselaer, 2004). It has been estimated that greater than $193 billion in lost wages annually are attributable to mental illness, while the burden of mental health care is greater than $300 billion over that same one-

year period in the United States (Insel, 2008; Kessler et al., 2008). The estimated lifetime prevalence of any mental disorder globally has been found to range from 12% to 47%, with lifetime prevalence in the U.S. at 47% (Kessler et al., 2007). Epidemiological studies have consistently found that between one in four and one in five adults in the U.S. are in need of mental health services (Aneshensel, Phelan, & Bierman, 2013). Even more concerning are findings indicating that only one-half of those in need of services receive treatment over a one-year period and only a third of those individuals receive treatments that meet minimal standards of adequacy (Wang et al., 2007; Wang et al., 2005).

Despite the well-documented high need for mental health care and the plethora of research demonstrating the effectiveness of treatment (Campbell, Norcross, Vasquez, & Kaslow, 2013; Carr, 2009; Cuijpers, van Straten, Andersson, & van Oppen, 2008), a significant proportion of individuals with diagnosable disorders never receive treatment or drop out of treatment prematurely (Mojtabai et al., 2011; van Zoonen et al., 2015; Wang et al., 2007). Left untreated, mental illnesses result in substantial personal consequences (e.g. loss of independence), social consequences (e.g. loss of significant relationships), and economic consequences (e.g. increased health care expenditures) that further exasperate the symptoms of mental disorders (Andrade et al., 2014; Whiteford et al., 2013; Whiteford, Ferrari, Degenhardt, Feigin, & Vos, 2015). Thus, programs of research are needed to delineate the factors that facilitate and prevent individuals from seeking treatment for mental health concerns.

Help-Seeking

The concept of help-seeking can be traced back to the work of Mechanic (1966, 1976, 1982, 1992) and his concept of "illness behavior". Mechanic defined illness behavior as encompassing the behaviors in which people engage as they monitor their health, how they

define and interpret symptoms when they arise, the preventative actions people take or remedial actions they take, and ultimately how they utilize the health care system (Rickwood & Thomas, 2012). Since Mechanic (1966) delineated the concept of illness behaviors, various models of illness behaviors have been posited (e.g. Aday & Andersen, 1974; Fabrega, 1973; Mechanic, 1962b; Suchman, 1965), all of which have considered help-seeking as an integral component of the illness behavior process. Mechanic and many theorists that followed him defined help seeking as an adaptive form of coping when working through the illness process. As specific lines of research focusing on help-seeking have evolved, this definition was revised to include the idea that help seeking is an active and problem-focused coping strategy, often involving communication of this need for help to another person (Rickwood & Braithwaite, 1994; Rickwood & Thomas, 2012).

Barriers and facilitators. An alarming proportion of individuals who meet criteria for a mental illness go untreated each year, with some estimates as high as 50% of individuals with depression and 35-50% of individuals with anxiety failing to seek help from a mental health care provider (Bland, Newman, & Orn, 1997; Roy-Byrne et al., 2000). As more evidence of the "treatment gap" has been found, the research literature has responded with a plethora of research concerned with describing and quantifying the barriers that individuals face when entering the help-seeking process. These barriers have most often been divided into structural barriers (e.g. transportation, costs) and psychosocial or attitudinal factors (e.g. attitude towards mental health care, stigma). A systematic review by Gulliver, Griffiths, and Christensen (2010) identified a variety of barriers to young adults utilizing treatment, including perceived stigma, lack of accessibility, a preference for self-reliance, difficulty identifying symptoms, and lack of knowledge about services. Other authors have also provided support for these barriers, low

perceived need for treatment and perceived ineffectiveness of treatment (Andrade et al., 2014; Gulliver, Griffiths, & Christensen, 2010; Mojtabai et al., 2011), preferring to attempt to handle problems on one's own (Mackenzie, Pagura, & Sareen, 2010; Sylwestrzak, Overholt, Ristau, & Coker, 2015), and perceived stigma (Angermeyer & Dietrich, 2006; Barney, Griffiths, Jorm, & Christensen, 2006; Clement et al., 2014; Henderson, Evans-Lacko, & Thornicroft, 2013). Structural barriers such as financial constraints, low availability of services, and lack of transportation have shown some importance but when compared with psychosocial barriers, structural barriers appear to be less important (see Andrade et al., 2014; Mojtabai et al., 2011).

Health Behavior Models

Research examining the social, psychological, and demographic antecedents to help seeking has burgeoned in recent decades (e.g. see Mackenzie, Erickson, Deane, & Wright, 2014; Rickwood & Thomas, 2012). As discussed earlier, previous research has identified a variety of factors associated with help seeking decisions, with the most consistently examined factors including attitudes towards mental illness and mental health care (Mak & Davis, 2014; Mo & Mak, 2009; Schomerus, Matschinger, & Angermeyer, 2009; Skogstad, Deane, & Spicer, 2006), perceived and actual stigma towards mental illness and treatment (Corrigan, Druss, & Perlick, 2014; Pattyn, Verhaeghe, Sercu, & Bracke, 2014; Schnyder, Panczak, Groth, & Schultze-Lutter, 2017), psychological distress (ten Have, de Graaf, Vollebergh, & Beekman, 2004; Thompson, Hunt, & Issakidis, 2004), and individual traits (Kakhnovets, 2011; Vogel & Wei, 2005). However, much of the existing help seeking literature lacks a coherent theoretical foundation and many of the factors frequently found to be related to help seeking are also often found to be unrelated in another study. The current study expanded upon previous help seeking research by testing a model of help seeking that integrates components of the health belief model (HBM;

Rosenstock, 1990) within the theoretical framework from another expectancy-value model, the theory of planned behavior (TPB; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010).

The theory of planned behavior. The TPB posits that one's actual help-seeking behavior is best predicted by one's intention to engage in help-seeking behavior. Intention to engage in a behavior is modeled as the product of three factors: one's attitude towards the behavior, the subjective norms one associates with performing the behavior, and one's perceived mastery of and control over engagement in the behavior. These three factors (attitudes, perceived norms, and perceived control) are conceptualized as products of beliefs individual's hold, termed behavioral beliefs, normative beliefs, and control beliefs, respectively (Fishbein & Ajzen, 2010). That is, the key components of the TPB, in the context of help-seeking behavior, are at least partially derived from beliefs about mental health, mental illness, and one's ability to prevent and/or manage their mental well-being. The validity of the TPB as it applies to help seeking has been supported by previous research with college students (Hess & Tracey, 2013; Hunt & Eisenberg, 2010) and general community members (Mak & Davis, 2014; Schomerus et al., 2009). The TPB has also demonstrated an ability to predict behavior change in intervention studies of both physical and mental health (see Steinmetz, Knappstein, Ajzen, Schmidt, & Kabst, 2016). While the TPB is not the main focus of the current study, the relationships between the proximal predictors of behavioral intentions (attitudes, perceived norms, and perceived behavioral control) and actual behavior, posited by the TPB (see Fishbein & Ajzen, 2010), are conceptualized as being derived from the models that are tested. That is, the core components of the TPB are products of beliefs about a behavior, such as the belief components posited by the health belief model.

Health belief model. The health belief model (HBM; Rosenstock, 1974; Rosenstock, Strecher, & Becker, 1988) is also an expectancy-value model of health behavior, originally proposed as a framework for understanding why individuals engage in or fail to engage in proactive health behaviors, such as seeking help when symptoms arise, adhering to medication regimens, or getting mammograms at suggested times. The HBM is one of the most widely used frameworks for understanding health behaviors and provides a useful framework for modeling the effects of individual level and contextual level factors on behavior (Glanz, Rimer, & Viswanath, 2008). The HBM is based on the theory that individuals are more likely to engage in health-promoting behavior to the extent that they believe that they are susceptible to a related health problem, believe there are severe consequences related to having that problem, believe that treatment or prevention behaviors will be effective at reducing risk or treating symptoms, and believe there are few barriers that could prevent action from being taken (Rosenstock, 1974, 1990).

The HBM (Figure 1), in its original form proposes five core beliefs that guide an individuals' help-seeking behavior: (a) perceived susceptibility to mental illness; (b) perceived severity or seriousness of the consequences related to having a mental illness; (c) perceived benefits of seeking help for a mental illness; (d) perceived barriers between an individual and seeking mental health care; and (e) individuals' general health motivation (GHM). Susceptibility, severity, and GHM are considered individual perceptions that jointly predict a perceived level of threat presented by a particular illness. Perceived level of threat, along with an individual's perceived benefits of seeking help minus the individual's perceived barriers to seeking help, predict an estimate of the likelihood that the individual will seek help. In addition to these core beliefs, Rosenstock (1990) also emphasized the importance of demographic and psychosocial

factors on health behaviors. As can be seen in Figure 1, these modifying factors influence individuals' perceived threat of illness, as well as perceptions individuals have regarding the barriers and benefits to seeking help.

The final component of the HBM is *cues to action*, or stimuli that remind or reinforce the severity or threat posed by mental illness. Cues can come in a variety of forms such as a television ad for an antidepressant, a primary care physician's probing questions, or the moment individuals label something in their experience as a "symptom". Rosenstock et al. (1988) expanded the HBM to include a self-efficacy component, proposing that an understanding of one's expectation about their ability to influence outcomes is critical in predicting health behavior outcomes.

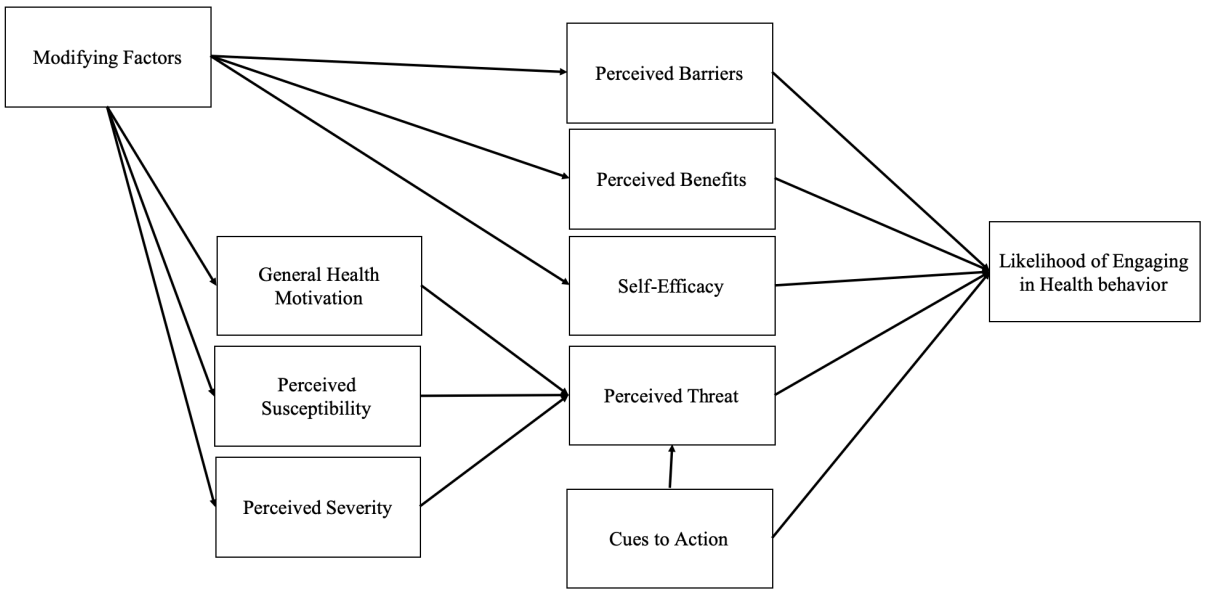

Figure 1. Extended Health Belief Model.

The literature examining mental health beliefs using the HBM is significantly limited compared to literature examining the application of the HBM to physical health beliefs (Choudhry, Mani, Ming, & Khan, 2016). The literature examining physical health behaviors has

frequently supported the use of the HBM for understanding health decision-making across a wide variety of areas, including smoking cessation (Mantler, 2012), HPV vaccination (Radisic, Chapman, Flight, & Wilson, 2017), medication adherence (Conn, Enriquez, Ruppar, & Chan, 2016), physical activity (Plotnikoff, Costigan, Karunamuni, & Lubans, 2013), and a variety of other health behaviors (see Carpenter, 2010; Harrison, Mullem, & Green, 1992). In a meta-analysis examining the effectiveness of the HBM variables in predicting physical health behaviors, Carpenter (2010) identified perceived benefits and perceived barriers as being the strongest predictors of behaviors, with the caveat that there are a number of moderators in the relationships between HBM variables and behavior, ultimately recommending that HBM variables be modeled as indirect predictors of health behaviors.

While application of the HBM to mental health conditions and mental health treatment behaviors has been limited, there are important clinical and academic implications for the study of mental health related behaviors through the lens of the HBM (Henshaw & Freedman-Doan, 2009). Evidence for the validity of the HBM's ability to predict treatment behaviors related to mental disorders has been mixed but previous findings suggest that the HBM constructs are, to some degree, important when predicting mental health behaviors (e.g. Castonguay, Filer, & Pitts, 2016; J. E. Kim & Zane, 2016; Nobiling & Maykrantz, 2017). O'Connor, Martin, Weeks, and Ong (2014) examined HBM factors as predictors and moderators of help-seeking intentions in a college student convenience sample. These authors found that of the six HBM factors assessed, only perceived benefits and perceived barriers were significant predictors of intentions in a multiple regression analysis (perceived susceptibility, severity, self-efficacy, and general health motivation were not significant predictors). Perceived susceptibility was found to be predictive of intentions only when the relationship was moderated by general health motivation (GHM) and

perceived benefits. Specifically, susceptibility predicted intentions only when individuals reported high GHM or they believed there were benefits to getting help.

Langley, Wootton, and Grieve (2017) examined the utility of the HBM in predicting help seeking behavior specifically for anxiety disorders in a sample of Australian college students. While the authors report numerous times that their results provide support for the utility of the HBM in predicting help-seeking intentions, they only found support for the utility of perceived benefits as a predictor of help-seeking intentions. However, Langley et al.'s (2017) operationalization of perceived benefits is highly problematic, as they measured the construct using the attitudes toward seeking professional psychological help scale (ATSPPHS; Fischer & Turner, 1970), which has significant conceptual overlap with measures of intentions to seek help (Ægisdóttir & Gerstein, 2009). Bistricky et al. (2017) examined college students' intent to use stress reduction techniques as predicted by HBM constructs. General health motivation was the only robust predictor of intention to use stress reduction techniques, predicting a wide range of techniques, while susceptibility, benefits, and barriers were only marginally significant and predicted the use of only one technique.

Kim and Zane (2016) utilized the HBM framework to predict intentions to seek mental health services and to examine the mediating role of susceptibility, severity, benefits, and barriers in the relationship between ethnicity (Asian American, White American) and help-seeking intentions. Of the four HBM components they examined, benefits, barriers, and severity were found to be significant predictors of help-seeking intentions, with benefits by far being the strongest predictor. However, like other studies, these authors utilized a more idiosyncratic operationalization of the HBM constructs. For example, they used a measure of mental health

literacy as a proxy for susceptibility rather than an instrument intended to measure the HBM construct of susceptibility.

In the current study the predictive power of the HBM components with regard to intentions to seek mental health services was examined. Within this context, sociodemographic factors believed to influence health beliefs were also examined, one of which pertains to individuals' background knowledge regarding mental health care and mental illnesses, often referred to as mental health literacy.

Mental Health Literacy

As discussed previously, barriers to seeking mental health care have frequently been categorized into structural barriers and psychosocial/attitudinal barriers. However, Thompson et al. (2004) suggested a third dimension capturing knowledge of mental health and illness should also be considered separate from attitudinal barriers. Mental health literacy (MHL) has frequently been defined and operationalized in previous research as including: knowledge of and beliefs about mental disorders, the ability to recognize or identify mental illness, knowledge of how to manage and promote mental health, and knowledge related to prevention (Bonabi et al., 2016; Jorm, 2012; Kutcher, Wei, & Coniglio, 2016). In other words, persons who are mental health literate are able to recognize specific disorders, are knowledgeable of the likely course and consequences of specific disorders and are knowledgeable on how to cultivate mental health. In contrast, those with low MHL do not recognize symptoms or appropriately attribute them to a disorder, are unaware of the treatability of mental illness and the various providers of mental health care, and do not know how to prevent mental illness and nurture their mental wellness.

The effects of low MHL have a trickle-down effect, whereby individuals who need services (have a diagnosable mental illness) frequently go without it due to not understanding

that their symptoms can be treated, they do not know that these treatments are strongly supported by empirical evidence, and that interventions from alternative medicine frequently do not have evidence to support them (Coles & Coleman, 2010; Gulliver et al., 2010; Kutcher et al., 2016; Picco et al., 2016). As discussed previously, low perceived need for treatment is one of the most frequently endorsed barriers to seeking help. Andrade et al. (2014) speculated that one possible reason for the consistent finding of low perceived need for treatment is low MHL and ineffective health beliefs due to low MHL.

Previous research has demonstrated associations between MHL and a variety of outcomes related to help seeking. High MHL has been found to be associated with an increased likelihood of seeking help, being able to help others with a mental illness, and reduced stigma towards seeking services and towards mental illnesses (Corrigan, 2004; Gabriel & Violato, 2010a; Kitchener & Jorm, 2004; Morawska et al., 2013; Palazzo, Dell'Osso, Altamura, Stein, & Baldwin, 2014). Individuals with high MHL are also better able to identify mental disorders and are more knowledgeable of appropriate resources for treatment. In contrast, individuals with low MHL terminate from therapy early and engage in maladaptive coping behaviors, such as substance abuse or denying/minimizing distress (Jorm, 2012; Reavley & Jorm, 2011a, 2011b; Rüsch, Evans-Lacko, Henderson, Flach, & Thornicroft, 2011). Previous studies evaluating interventions targeting MHL have found that increases in MHL predict positive attitudes toward seeking psychological help and a decrease in stigmatizing attitudes (Gabriel & Violato, 2010b; Rüsch et al., 2011). Additionally, individuals with high MHL are less likely to delay seeking care for themselves and recommend care for others through being better able to identify symptoms and other warning signs in their self, as well as in others (Jorm, 2012; King, Vidourek, & Strader, 2008; Mendenhall, Jackson, & Hase, 2013).

Previous research has also suggested significant relationships exist between MHL and the components of the HBM. It seems likely that an individuals' knowledge and understanding of mental illness will have an impact on the health beliefs they develop, indirectly impacting the likelihood that they will seek help (Petrie, Broadbent, & Kydd, 2009). Research suggests that MHL is distinct from HBM sociocognitive factors such as perceived susceptibility and perceived severity, but related to these factors (J. E. Kim & Zane, 2016). Further, Fishbein and Ajzen (2010) included the concept of "knowledge" as a background factor that influences beliefs and subsequently intentions through its effect on more proximal predictors. Also, research has found that mental health literacy and problem recognition (strongly associated with MHL) are strongly associated with intentions to seek help (e.g. Wright, Jorm, Harris, & McGorry, 2007) calling for the integration of MHL with established models like the TPB (e.g. Rickwood & Thomas, 2012).

Given the volume of literature demonstrating the influence that MHL has on help-seeking behavior, any attempt at constructing a conceptual model of help-seeking behavior would be amiss to neglect MHL as an integral component. Additionally, the concept of MHL in the research literature has frequently been so ambiguous and amorphous in its operationalization, as to render any general statements about associations between MHL and HBM factors useless, if not misleading. For example, Wei, McGrath, Hayden, and Kutcher (2015) cited 69 different measures of mental health knowledge. While it is clear that some kind of "mental health knowledge" is linked to treatment seeking, studies of MHL to date have failed to consolidate the many definitions of MHL and have not tested how it relates to the sociocognitive models that have also demonstrated efficacy in predicting treatment seeking.

In addition to integrating MHL with the HBM, in the current study, the effects of gender identity, previous help-seeking experiences, and level of psychological distress on health beliefs

and help-seeking intentions were examined as part of the model predicting intentions from health beliefs and MHL. These variables have all been implicated as direct predictors of help seeking attitudes and intentions, or as mediators or moderators of the relationships between other factors and help seeking.

Background Sociodemographic Factors

Gender. Previous research has consistently found that, compared to their male counterparts, women have more positive attitudes towards help seeking and are more likely to seek mental health services (Ægisdóttir & Gerstein, 2009; Atik & Yalcin, 2011; Mackenzie, Gekoski, & Knox, 2006; Rickwood & Braithwaite, 1994; Vogel, Wade, Wester, Larson, & Hackler, 2007). A relatively recent meta-analysis of studies using college students and examining the effects of gender on attitudes toward help seeking found that gender is an important determinant of help seeking attitudes and ultimately behavior, with women holding more positive attitudes towards seeking mental health services (Nam et al., 2010). Men have been found to have difficulty with or to be uncomfortable with emotional expression and question the helpfulness of treatment, which impedes the likelihood that they will seek help (Cusack, Deane, Wilson, & Ciarrochi, 2006; Möller-Leimkühler, 2002). Relatedly, men are less likely to perceive distress as severe enough to warrant asking for help and are more likely to believe they should work it out alone (Andrade et al., 2014).

Prior help seeking. Individuals form their beliefs and attitudes towards objects and situations largely from their experiences with and knowledge of the object or situation (Fabrigar & Wegener, 2010). Thus, it is not surprising that previous research has frequently found that when compared with individuals with no previous counseling or help seeking, individuals who have previous counseling experiences differ in their attitudes towards and beliefs about seeking

mental health services (Ægisdóttir & Gerstein, 2009; Kahn & Williams, 2003; P. Y. Kim & Kendall, 2015; P. Y. Kim & Park, 2009; Vogel, Wester, Wei, & Boysen, 2005). In a study involving American undergraduate students, Ægisdóttir and Gerstein (2009) found that students with prior counseling experiences reported greater intent to seek psychological services and greater tolerance for treatment-related stigma compared to students without prior counseling experience. In another sample of undergraduate students, Kakhnovets (2011) found significant differences on a measure of attitudes towards seeking mental health services between students with and students without previous counseling experience, such that having previous counseling experiences predicted more positive attitudes towards seeking mental health services. It was also found that students with previous counseling experiences had a greater understanding of the counseling process and the expectations for counseling.

Psychological distress. One of the earliest predictors of help seeking to be offered was psychological distress, based on the logic that individuals likely would not be seeking professional psychological help if they were not experiencing a certain degree of distress. Ingham and Miller (1986) examined the factors that discriminate between patients who consulted with their primary care physician and those who did not consult their physician. Ingham and Miller found that symptom severity was the most potent discriminating factor, with individuals who reported higher levels of distress being more likely to ultimately seek consultation with their physician for both physical and psychological distress. Cramer (1999) build on Ingham and Miller's work, hypothesizing that psychological distress would be a significant predictor of seeking professional psychological help. Path analyses supported this hypothesis, as Cramer found that individuals were more likely to seek help when distress was high and attitudes towards seeking help were positive. A great deal of research supporting the relationship between

psychological distress and help seeking has been published over the last two decades (Fischer & Farina, 1970; Kahn & Williams, 2003; B. S. K. Kim & Omizo, 2003; Ryan, Shochet, & Stallman, 2014; Shaffer, Vogel, & Wei, 2006; Vogel & Armstrong, 2010; Vogel, Wade, & Hackler, 2008; Vogel & Wei, 2005). However, a large number of studies have also found no relationship between level of psychological distress, attitudes toward help seeking, and intention to seek help (Çebi, 2009; Cheang & Davis, 2014; A. E. Kelly & Achter, 1995; P. Y. Kim & Park, 2009; Vogel, Gentile, & Kaplan, 2008; Vogel & Wester, 2003; Vogel et al., 2005). Thus, currently there is no consensus in the literature regarding the role of psychological distress in predicting when an individual will seek mental health services. However, given the number of studies that have demonstrated a significant relationship between help-seeking and distress, the current study would be amiss to not include an assessment of distress.

The Current Study

Building on the existing literature, the aims of the current study were three-fold: 1) examine the utility of the HBM in predicting intentions to seek mental health services (Model 1, Figure 2); 2) examine the utility of a modified HBM that includes MHL as a direct predictor of health beliefs and an indirect predictor of intentions to seek help through its effects on health beliefs; and 3) examine the effects of gender, prior help seeking, and level of psychological distress on the aforementioned models of help seeking behavior. The modified HBM (Model 2, Figure 3) provided the opportunity to examine the effects of MHL on help seeking, in conjunction with HBM constructs. To this author's knowledge, only one other study (O'Connor et al., 2014) has examined both MHL and the HBM simultaneously. In the current study, the work of O'Connor et al. was extended in a number of ways: 1) data was collected from both college student convenience sample as well as from a general community sample, 2) MHL was

measured using a previously designed and tested instrument rather than one made for the purposes of the study, 3) a measure of mental health help seeking self-efficacy was used, rather than a general self-efficacy measure, and 4) structural equation modeling was used to test hypotheses, which is a more robust data analytic strategy than multiple regression, as utilized by O'Connor et al. (2014).

Rationale and significance. Findings from previous research supports the utility of the HBM for predicting help-seeking behavior. Carpenter (2010), in his meta-analysis of 18 studies found correlations between each of the four main components of the HBM and actual outcome behavior, with perceived barriers and perceived benefits consistently being the strongest predictors of health behaviors. The HBM has spawned an extensive body of literature, from basic research to studies reporting theory-informed interventions aimed at increasing health promoting behaviors, such as help seeking. HBM-informed interventions for physical health behaviors have demonstrated efficacy in predicting and changing behaviors (Linke, Robinson, & Pekmezi, 2013). Interventions aimed at promoting mental health and help seeking and destigmatizing mental illness have historically lacked theoretical foundations (C. M. Kelly, Jorm, & Wright, 2007). Thus, further development and testing of theories underlying help seeking and mental health behaviors is important for developing efficacious mental health campaigns.

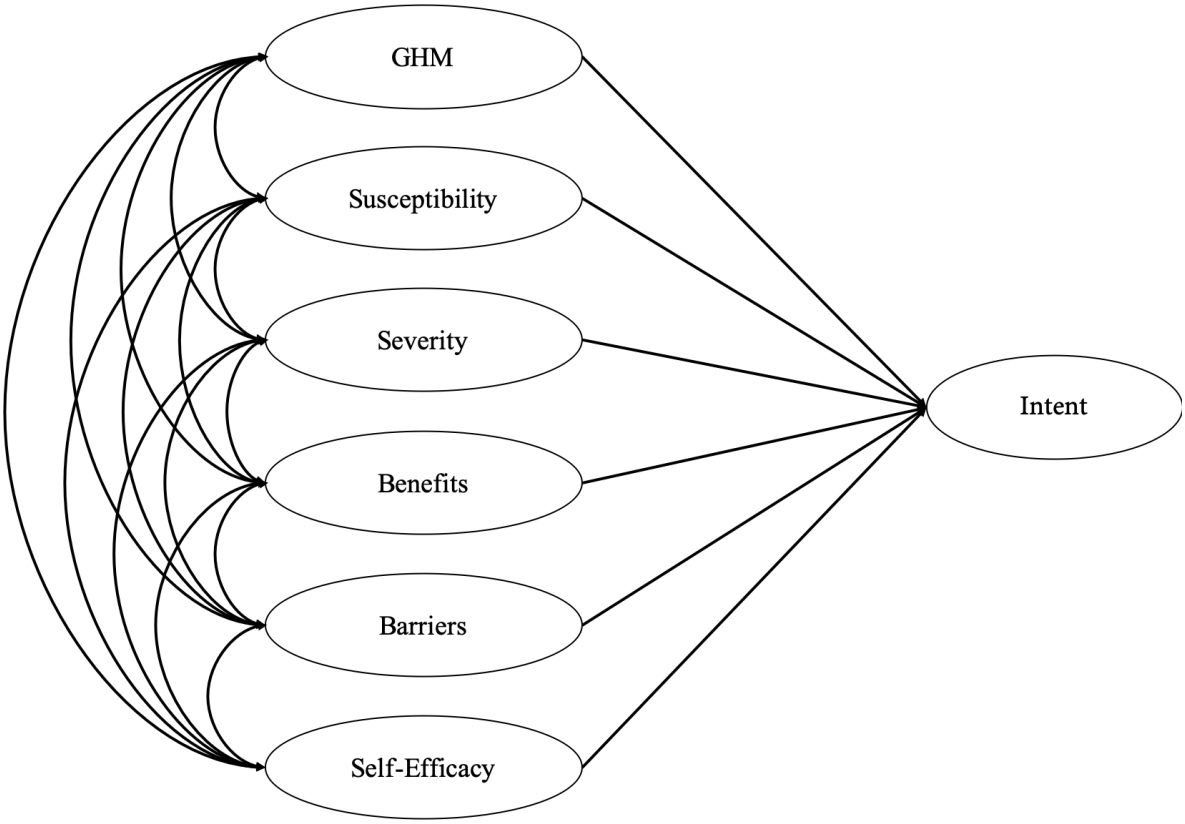

Figure 2. Hypothesized Model 1

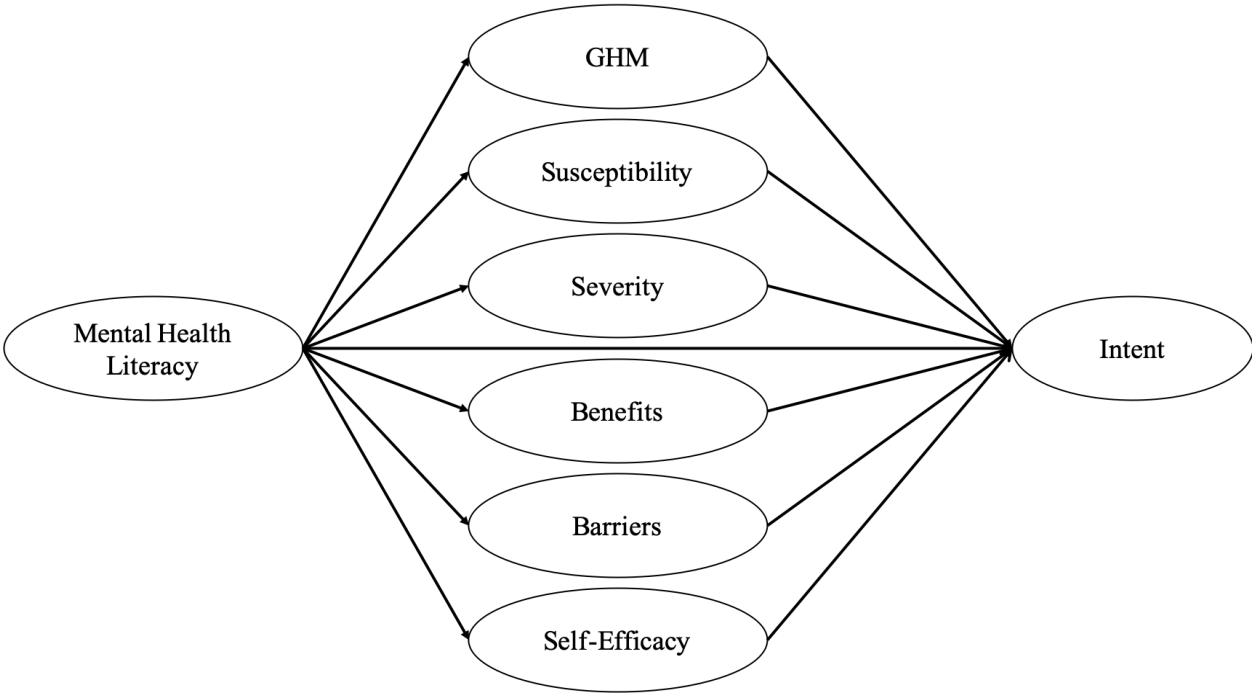

Figure 3. Hypothesized Model 2 (Covariances between mediators omitted to preserve clarity).

Hypotheses and research questions. The current study was both confirmatory and exploratory in nature. Given the scarcity of previous research concerning the relationship between health belief constructs, mental health literacy, and help seeking, this study aimed to provide a point of reference for future research endeavors. To this end, latent variable modeling was utilized to test not only structural relationships between latent constructs (general health motivation, perceived benefits, perceived barriers, perceived susceptibility, perceived severity, self-efficacy, MHL, and intentions) but also the measurement invariance and the moderating effects of categorical covariates (gender identity, previous mental health service utilization, and psychological distress) on the relationships between latent constructs. Four specific hypotheses regarding the relationships between the latent constructs of interest were examined:

H1: Intentions to seek help will be positively associated with general health motivation, perceived benefits, perceived susceptibility, perceived severity, and self-efficacy; while being negatively associated with perceived barriers (Model 1).

H2: Help-seeking self-efficacy, perceived barriers, perceived benefits, perceived susceptibility, perceived severity, and general health motivation will partially mediate the relationship between mental health literacy and help-seeking intentions (Model 2), such that increased MHL will predict a decrease in perceived barriers, and an increase self-efficacy, perceived benefits, perceived susceptibility, perceived severity, and general health motivation, leading to an increase in intentions to seek mental health services.

H3: The model integrating the HBM factors and mental health literacy (Model 2) will explain more variance in help seeking intentions and be a better fit to the data than the model containing the HBM factors alone (Model 1).

H4: Latent means will differ significantly between groups of low and high psychological distress, between those who have and those who have not sought help in the past, and between men and women. Specifically, participants with high psychological distress, with a history of previous help-seeking, and who identify as female will report greater intentions to seek mental health care, general health motivation, perceived benefits, perceived susceptibility, perceived severity, self-efficacy, and mental health literacy, and lower perceived barriers.

Methods

Participants

Table 1 provides detailed descriptions of the study's sample. After completing data screening procedures (described later), the final sample consisted of 632 adults (76% female, *M* age = 27, *SD* = 11.53) from the United States (82%), UK (6.4%), Canada (2%), Australia (2%), and other European, Asian, African, and South American nations (see Figure 4). Of the total sample, 92.3% reported citizenship of a country where the primary language is English, while 7.7% reported citizenship of a country where the primary language is not English. Given that the questionnaire was only available in English, language fluency could have presented an issue. However, given that the questionnaire was advertised on an English language domain, it is

reasonable to assume that the respondents from non-English speaking countries had at least an adequate level of English fluency in order to be frequenting English-language websites. A large proportion of the sample identified as White or Caucasian (79.3%), reported at least some college or vocational training level of education (82.2%), and identified as heterosexual (74.5%). The representation of socioeconomic status was well distributed in the sample: working class (35.1%), middle class (45.8%), upper-middle class (17.5%), and upper class (.9%). Regarding previous experiences with mental health care, 49.5% of the sample reported previously being diagnosed with a psychiatric illness, 64.6% reported having previously sought mental health care, and 88.5% reported knowing someone who had sought help. For individuals with previous psychological help seeking, on average they rated their satisfaction with previous mental health care at 4.33 (*SD* = 1.49; scale range:1-6).

Table 1.

Characteristics of Participants

	n	*%*		*n*	*%*
Gender	640		**Education**	642	
Male	138	21.4	High School or Below	113	17.6
Female	490	76.1	Some College	257	39.9
Transgender	4	.6	Trade/Technical/Vocational Training	14	2.2
Other	8	1.2	Associate Degree	32	5.0
			Bachelor's Degree	140	21.7
Age	627		Graduate	86	13.4
18-25	404	62.7			
26-35	116	18.0	**Socioeconomic Status**	640	
36-60	89	13.8	Lower Class or Working Class	226	35.1
61+	18	2.8	Middle Class	295	45.8
			Upper-Middle Class	113	17.5
Ethnicity	639		Upper Class	6	.9
Asian/Pacific Islander	25	3.9			
Black or African American	39	6.1	**Sexual Orientation**	641	
Hispanic or Latino	19	3.0	Heterosexual or Straight	480	74.5
Native American	1	.2	Gay or Lesbian	28	4.3
White or Caucasian	511	79.3	Bisexual	89	13.8
Bi-racial	35	5.4	Other	44	6.8
Other	9	1.4			

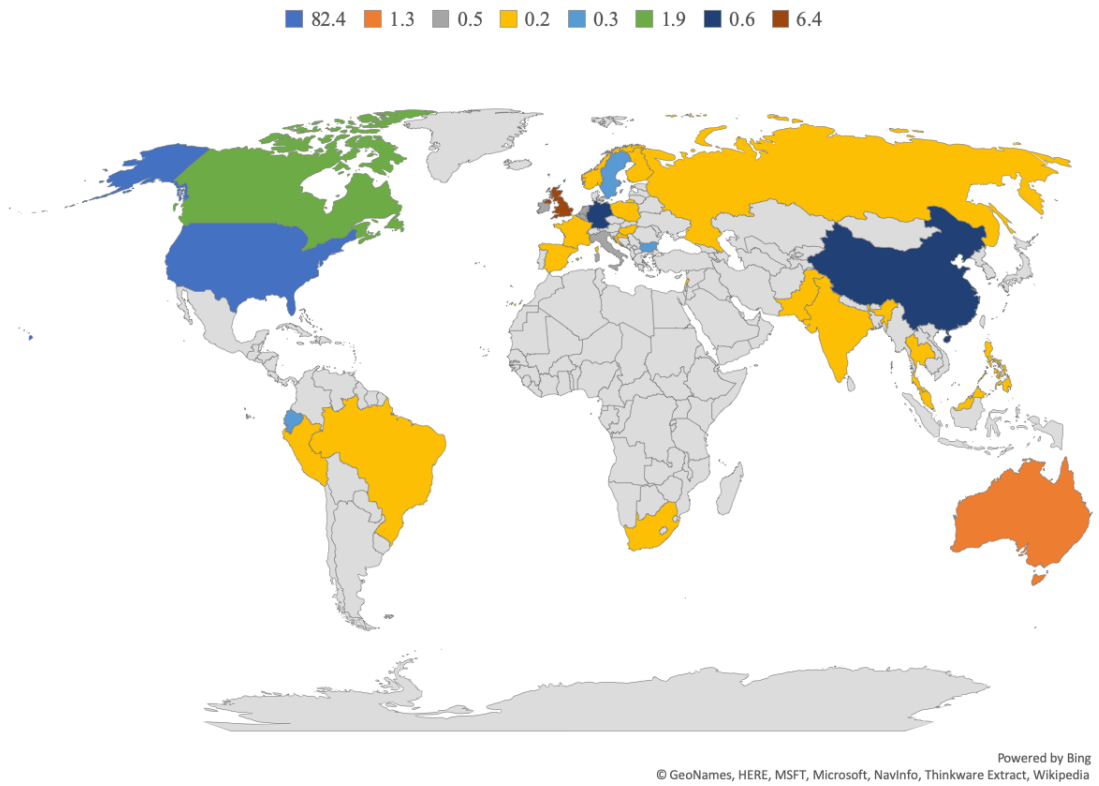

Figure 4. Citizenship status of participants

Procedure

Data collection started after approval was received from the Ball State University Institutional Review Board (IRB). No modifications to the procedure were requested. An online survey with the instruments assessing the variables of study was created using Qualtrics survey software (https://www.qualtrics.com). Participants were recruited through a variety of methods, including: an undergraduate participant pool, flyers posted around a university campus, flyers posted on public bulletin boards, social media, and online message boards and participant recruitment sites. Participants were compensated for their participation with either partial fulfillment of a research participation requirement in their psychology courses or a single entry into a drawing for 1 of 20 Amazon.com gift cards of $20.

All participants were provided with an informed consent form with information regarding the broad purpose of the study, potential risks and benefits of participation, and contact information should they have questions or have an adverse reaction to study material during participation. After consent was provided, participants were instructed to complete the questionnaires, including one collecting basic demographic information, followed by the scales assessing the variables of interest. The scales, apart from the demographic questionnaire, were presented in random order to reduce any potential order effects.

Instruments

Help-seeking intentions. Help-seeking intentions was assessed using the intent subscale of the beliefs about psychological services scale (BAPS; Ægisdóttir & Gerstein, 2009). The BAPS is composed of 18 items, six of which belong to the Intent subscale (e.g., "At some future time, I might want to see a mental health professional"). Participants respond by indicating their degree of agreement on a 6-point Likert-type scale, from 1 (*strongly disagree*) to 6 (*strongly agree*), with higher scores indicating intentions to seek help.

The BAPS has demonstrated known-groups discriminant validity in previous research, discriminating between men and women and individuals with and without prior counseling experiences (Ægisdóttir & Gerstein, 2009). Ægisdóttir and Gerstein also provided evidence of the construct, convergent, and divergent validity of the BAPS. Using confirmatory factor analysis, the three-factor model hypothesized to underlie the BAPS produced adequate fit indices (CFI = 0.91, RMSEA (90% CI) = 0.06 (0.05-0.08), ECVI (90% CI) = 1.67 (1.46-1.92). The BAPS total score correlated highly (.83) with another established scale of help-seeking attitudes (Attitudes Towards Seeking Professional Psychological Help; Fischer & Turner, 1970). In

support of the divergent validity of the BAPS, Ægisdóttir and Gerstein (2009) reported the total score on the BAPS was found to be uncorrelated with a measure of social desirability (r = .08).

Previous research using the BAPS have found moderate to good reliability estimates with alphas ranging from .81 to .90 for the Intent subscale (Ingólfsson, 2017; Ægisdóttir & Gerstein, 2009). Additionally, Ægisdóttir and Gerstein also examined test-retest reliabilities on the BAPS subscales, ranging from .79 to .88, and .75 for the BAPS total score. For the current study, Cronbach's alpha was .84, 95% BCa CI [.82, .86]).

Health belief model factors. Perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and general health motivation (GHM) were assessed using a selection of subscales from the Health Beliefs about Mental Illness Inventory (HBMI; Saleeby, 2000; Appendix D). The HBMI is a 48-item self-report instrument designed to assess core components of the HBM (GHM, perceived susceptibility, perceived severity, perceived benefits, and perceived barriers) as they relate to mental illness, substance-use disorders, and seeking help for mental illness and substance-use disorders. In the current study, 26 items across five subscales were used that assess beliefs about mental illness. HBMI items ask participants to respond by indicating degree of agreement with statements using a 5-point Likert-type scale from 1(*Strongly disagree*) to 5 (*Strongly agree*). The GHM subscale is composed of six items (e.g., "I feel it is important to carry out activities which improve my emotional health"). The susceptibility subscale has five items (e.g., "My chances of having emotional or nervous problems are great"). The severity subscale contains six items (e.g., "I am afraid to think about emotional or nervous problems"). The benefits subscale is composed of four items (e.g., "A burden would be lifted off me if I were to get help for emotional or nervous problems"). Finally,

the barrier subscale includes five items (e.g., “Getting help for emotional/nervous problems is embarrassing”).

Construct validity and content validity for the five HBMI subscales that were used in the current study were demonstrated by Saleeby (2000), who also reported internal consistency reliability, ranging from .69 to .95, with test-retest reliability ranging from .45 to .80. Limited psychometric data for the HBMI is available beyond this. O’Connor et al. (2014) examined mental health beliefs and help seeking utilizing the HBMI. However, O’Connor et al. failed to report any psychometric data from their sample. For the current study, two subscales, GHM and perceived barriers, demonstrated questionable reliability, $\alpha = .59$ and $\alpha = .64$, respectively. An exploratory factor analysis (EFA) using principle axis factoring (PAF) revealed two of the six GHM items had extremely poor communalities (.09 and .06). The content of these two items are distinct from the other four, in that they make no mention of mental or emotional health and instead ask about having regular health check-ups and eating well-balanced meals. These two items were dropped from the subscale score, resulting in a more acceptable estimate of reliability for GHM, $\alpha = .74$, 95% BCa CI [.69, .77]. A second EFA with PAF was conducted on the four perceived barriers items and all four items produced adequate factor loadings with the single dimension. While the reliability estimate for the barriers subscale was questionable ($\alpha = .64$, 95% BCa CI [.59, .69]), measurement error was accounted for by the analysis using structural equation modeling. The other HBMI subscales produced acceptable reliability estimates: perceived benefits, $\alpha = .74$, 95% BCa CI [.68, .77]; perceived susceptibility, $\alpha = .94$, 95% BCa CI [.92, .94]; and perceived severity $\alpha = .75$, 95% BCa CI [.71, 77].

Mental health literacy. Mental health literacy was assessed using the Mental Health Literacy Scale (MHLS; O’Connor & Casey, 2015). The MHLS is a 35-item measure of MHL

across six MHL attributes (O'Connor, Casey, & Clough, 2014): recognition of disorders (e.g., "To what extent do you think it is likely that Dysthymia is a disorder?"), attitudes that promote recognition and appropriate help-seeking (e.g., "A mental illness is not a real medical illness"), knowledge of where to seek mental health information (e.g., "I am confident that I know where to seek information about mental illness"), risk factors and causes (e.g., "To what extent do you think that it is likely that in general in the United States, women are more likely to experience a mental illness of any kind compared to men?"), self-treatments (e.g., "To what extent do you think it would be helpful for someone to improve their quality of sleep if they were having difficulties managing their emotions"), and professional help available (e.g., "To what extent do you think it is likely that Cognitive Behavior Therapy [CBT] is a therapy based on challenging negative thoughts and increasing helpful behaviors?"). Participants responded to MHLS items using 4- and 5-point Likert-type scales of varying response labels. Scoring of the MHLS produces a single score ranging from 92 to 155, with higher scores reflecting greater MHL.

In initial psychometric testing, the MHLS total score showed internal and test-retest reliability of .87 and .80, respectively (O'Connor & Casey, 2015). Previous research utilizing the MHLS reported alpha coefficients from .80 to .89 (Recto & Champion, 2017; M. White & Casey, 2017). The MHLS was able to discriminate between a group of mental health professionals and a group of community respondents, between individuals with a history of mental illness and those without a history of mental illness, between individuals who have seen a mental health professional and those who have not, and between individuals who have had a family member or friend with a mental illness and those who have not. Additionally, scores on the MHLS were positively associated (r =.234, p <.001) with scores on the General Help-Seeking Questionnaire (GHSQ; Wilson, Deane, Ciarrochi, & Rickwood, 2005) and uncorrelated

with psychological distress, r =-.087, p = *ns* (O'Connor & Casey, 2015). Gorczynski, Sims-Schouten, Hill, and Wilson (2017) replicated previous findings that the MHLS is able to discriminate between individuals with and without a history of mental illness, F (1, 378) =59.72, p =.001. In the current study, Cronbach's alpha was .91, 95% BCa CI [.90, .92].

Psychological distress. Current psychological distress was assessed using the 6-item Kessler Psychological Distress Scale (K6; Kessler et al., 2002; Kessler et al., 2003). The K6 is a measure of nonspecific depression (e.g., "During the past 30 days, about how often did you feel worthless?") and anxiety (e.g., "During the past 30 days, about how often did you feel restless and fidgety?"), experienced over the past 30 days. Participants respond on a scale of 0 (*none of the time*) to 4 (*all of the time*), resulting in a range of scores from 0 to 24. where scores of 0 to 4 are suggestive of no or mild distress, scores of 5 to 12 are suggestive of moderate distress, and scores of 13 or greater are suggestive of serious distress (Kessler et al., 2002; Prochaska, Sung, Max, Shi, & Ong, 2012).

Prochaska et al. (2012), using ROC curve analysis, found that a K6 scale score ≥ 5 is an optimal cut-point for identifying individuals with mental health treatment needs. This cut-point provided a balance of sensitivity (.76) and specificity (.75), with an overall classification accuracy of .74. Using ROC curve analysis, Kessler et al. (2003) found similar sensitivity, specificity, and accuracy values for a cut-point of K6 ≥ 13 for predicting serious mental illness. Sunderland, Mahoney, and Andrews (2012), using a confirmatory factor analysis to compare latent factor models of K6 items between clinical and community samples, found that the one factor model of K6 items was optimal when used with the general population. Kessler et al. (2002) provided evidence for the validity of the K6 through demonstrating its ability to discriminate between clinical and nonclinical populations, as well as provided evidence of

internal consistency, ranging from $\alpha = .89$ to $\alpha = .92$. For the current study, Cronbach's alpha was .88, 95% BCa CI [.86, .89]. A median split was used to create two groups, one characterized by lower levels of distress (K6 scores ≤ 9) and one characterized by higher levels of distress (K6 scores ≥ 10), which would be later used as a grouping variable for multigroup confirmatory factor analyses and latent means analysis.

Self-efficacy. The Self-Efficacy in Seeking Mental Health Care (SE-SMHC; Appendix E) inventory (Moore, Schofield, van Rooyen, & Andersson, 2015) was used to assess help-seeking self-efficacy. The SE-SMHC is a nine-item self-report measure of participants' beliefs about their ability to effectively seek mental health care (e.g., "Be able to follow the treatment recommendations made by the staff"). Participants respond using a 10-point bipolar scale from 1 (*No confidence*) to 10 (*Complete confidence*), resulting in a score range between 9 and 90. Principal component factor analysis resulted in two factors, confidence in coping (SE-COPE) and confidence in knowledge (SE-KNOW), with eigenvalues of 5.19 and 1.04, explaining 70% of variance (Moore et al., 2015). The SE-SMHC demonstrated an ability to discriminate between individuals grouped by level of education, with greater educational attainment associated with greater self-efficacy. The SE-SMHC was also able to discriminate between individuals with a history of seeking help and those without a history and between individuals with and without a history specifically seeking help from a mental health professional (Moore et al., 2015). Previous research has reported excellent internal consistency reliability for the total score, ranging from .92 to .93 (Moore et al., 2015; Schofield, Dea Moore, Hall, & Coles, 2016). In the current study, the total scale Cronbach's alpha was .89, 95% BCa CI [.87, .90].

Demographics. Participants completed a questionnaire that included background and demographic items, including age, country of citizenship, education, gender identity, sexual

orientation, ethnicity, marital status, income, and religious/non-religious identity. Additionally, participants were asked if they have ever been diagnosed with a mental illness (yes, no), if they or someone they know well has ever sought help for a mental health concern (yes, no), and how satisfied were they with the help they received, using a 6-point bipolar scale (1= *Very unsatisfied*, 6 = *Very satisfied*).

Research Design and Analytic Strategy

The current study's design was cross-sectional, using a survey-type methodology. While correlational research has numerous limitations, including the inability to infer causation, such a design is well suited for exploring and identifying potential causal relationships. Identifying and describing such relationships can provide a source for the development of hypotheses that can later be tested using an experimental design. Structural equation modeling (SEM) was utilized due to its ability to compare multiple theoretical models of relationships among constructs of interest, its ability to explicitly model measurement error, and its flexibility in modeling complex relationships between variables. All statistical analyses were conducted using R version 3.5.2 (R Core Team, 2018) and IBM SPSS Statistics Version 25 (IBM Corp., 2017).

Model testing. Structural equation modeling analyses were carried out with the *Lavaan* package for R (Rosseel, 2012). To evaluate the adequacy of model-to-data fit, a number of fit indices were examined, including: root mean square error of approximation (RMSEA) as well as the associated *p* of close fit (CFit) test (Steiger, 1990), comparative fit index (CFI; Bentler, 1990), standardized root mean square residual (SRMR; Bentler, 1995), and the Tucker-Lewis index (TLI; Bentler & Bonett, 1980). While the model chi-square (χ^2) test statistic is also reported, it is largely reported for the sake of convention, recognizing the need for caution in interpreting its value given the relatively large sample size (Kline, 2011). Following the

recommendations of Kline (2011), West, Taylor, and Wu (2012), and Hu and Bentler (1999), fit indices were interpreted as follows: CFI and TLI values of ≥ .95 suggests excellent fit, ≥ .90 good fit, and < .90 considered poor fit; RMSEA ≤ .06 is considered good and ≤ .10 is acceptable; and SRMR values less than .08, indicate close model-to-data fit. Non-significant X^2 and CFit tests indicate good model fit to the data.

Item parceling. Following the recommendations of Matsunaga (2008) and Little, Cunningham, Shahar, and Widaman (2002), item parceling was used to create latent factors for unidimensional scales to enhance scale communality, reduce random error, mitigate problems related to nonnormality, and improve modeling efficiency. Individual items from six of the scales (general health motivation, perceived benefits, perceived barriers, perceived susceptibility, perceived severity, and intentions to seek help) were used as indicators to create latent variables. Item parcels were constructed as indicators for two of the variables (help-seeking self-efficacy and mental health literacy) due to having greater than six observed items. Prior to the creation of item parcels, exploratory factor analyses (EFA) with principle axis factoring and oblimin rotation were performed on mental health literacy and help-seeking self-efficacy items to ensure a unidimensional factor structure. After establishing unidimensionality, items were grouped and averaged into parcels using a factorial algorithm approach (see Matsunaga, 2008; Rogers & Schmitt, 2004), such that items with high, medium, and low factor scores were balanced. Three parcels of three items were created for the self-efficacy items and five parcels of 7 items were created for the mental health literacy items. In order to confirm the appropriateness of item allocation to parcels, a second-order confirmatory factor analysis was conducted following the recommendations of Hagtvet and Nasser (2004). Prior to the primary analyses, the data was

screened for missing data, univariate and multivariate outliers, univariate and multivariate normality, and multicollinearity.

Measurement invariance and latent means analyses. As discussed previously, prior studies have demonstrated that intentions to seek help and mental health literacy vary as a function of both gender and prior experiences of help seeking (e.g., Ægisdóttir & Gerstein, 2009; Gorczynski, Sims-schouten, Hill, & Wilson, 2017), while there has been inconsistent findings regarding the impact of psychological distress on help seeking intentions. Latent means analysis (LMA) was used to make comparisons across groups, that is, across male and female participants, across participants with and without a history of previous help-seeking behavior, and across participants reporting a low level of distress and those reporting an elevated level of distress. While most previous studies of help seeking have used more traditional methods of group comparisons (e.g., *t*-test and multivariate analysis of variance), LMA is more appropriate and more powerful when the variables of interest are otherwise conceptualized and tested as latent constructs (Hong, Malik, & Lee, 2003; Kuhn & Holling, 2009). LMA is a test of population heterogeneity, a furtherance of measurement invariance, which is a prerequisite for the comparison of latent means across groups.

Measurement invariance (MI) refers to the condition of latent constructs and observed indicators (items and parcels) having the same meaning across identified subgroups of the population. That is, MI can test whether the same factor model of the latent constructs is valid for both men and women, those with and without previous help-seeking behavior, and those with low and high levels of psychological distress. Put another way, MI was of interest in addition to LMA in order to ascertain whether the questionnaire items measured the same constructs and evidenced equivalent relationships to the factors across different groups. MI is assessed through

a procedure of fitting a sequence of nested, increasingly restrictive confirmatory factor analyses. This procedure followed the recommendations of Brown (2015), whereby the analysis began with the least restrictive solution where only construct dimensionality is constrained to be equal across groups (configural invariance or equal form), followed by models adding progressively more restrictive constraints; equal factor loadings (metric invariance), equal intercepts (scalar invariance), and equal residual variances (strict invariance). There has historically been debate about the necessary level of invariance to satisfy in order for LMA to be valid, with some suggesting there must be strict invariance (e.g., Meredith, 1993) and others arguing that strict invariance is unnecessary and suggest that scalar invariance is sufficient for LMA (e.g., Little, 1997). Following the recommendations of Brown (2015), the measurement model constraining factor structures, factor loadings, and indicator intercepts (scalar invariance) was used as the reference model for comparing the model constraining latent means.

Results

Data Screening

Of the 796 individuals who accessed the online questionnaire, 151 quit before completing any questionnaire items or had missing values for more than 20% of the questionnaire items. For the remaining cases in the sample, the pattern of missing data was inspected to determine if data were missing completely at random (MCAR). The missing data analysis, including Little's MCAR test was conducted using the *BaylorEdPsych* package for R (Beaujean, 2012). There were 86 cases with missing data and a total of 142 missing values out of a possible 80,896 (.18%). Because the "LittleMCAR" function in the *BaylorEdPsych* package can only handle 50 variables at a time, separate chi-square tests were conducted on subsets of the variables. Results of Little's MCAR test were not significant for the psychological distress items ($X^2 = 17.63$, $p =$

.061), the health belief model inventory items (X^2 =301.57, p = .338), and the help-seeking self-efficacy items (X^2 = 38.50, p = .199), indicating the missing values for these variables were MCAR. Results of Little's MCAR test were significant for the mental health literacy items (X^2 = 1243.20, p < .001) and the intent to seek help items (X^2 = 41.95, p = .003). However, given the well-documented sensitivity of chi-square tests to large sample sizes, it is not surprising that significant chi-square values were found. Given the relatively low rate of missing values within the mental health literacy and intent items, .23% and .16%, it was determined reasonable to proceed with expectation-maximization (EM) algorithm imputation of missing values (Dempster, Laird, & Rubin, 1977). Imputation was carried out using the *Amelia* (Honaker, King, & Blackwell, 2011) and *Zelig* (Choirat, Honaker, Imai, King, & Lau, 2018; Imai, King, & Lau, 2008) packages in R.

After missing data was addressed the data was examined for multivariate outliers using the *WRS* package in R (Wilcox & Schönbrodt, 2018). Two methods were utilized to identify multivariate outliers, Mahalanobis distance and a projection-based minimum volume ellipsoid (MVE) method. An observation was considered a multivariate outlier if its Mahalanobis distance fell beyond the 97.5 percent quantile of the chi-square distribution (i.e. df = 9, chi-square crit = 27.88). The MVE estimator (Rousseeuw & Leroy, 1987) is a robust estimator of multivariate location and scatter and has become a popular multivariate outlier detection strategy through the use of MVE-based robust distances (see Wilcox, 2012). The Mahalanobis D^2 statistic identified 13 cases as multivariate outliers, while the projection-based MVE method identified 10 of the same cases identified previously. All 13 cases were dropped from further analyses, resulting in a final sample size of 632 participants.

Multivariate normality was examined using Mardia's test of multivariate skewness and kurtosis, as well as through examining univariate distributions (see Kline, 2011), using the *QuantPsyc* package in R (Fletcher, 2012). Mardia's test indicated the data exhibited significant multivariate skewness ($\hat{\beta}_1$ = 77.207, κ = 8132.512, $p < .001$) and multivariate kurtosis ($\hat{\beta}_2$ = 1062.090, κ = 29.286, $p < .001$). Univariate normality was also examined using the Shapiro-Wilk Test (Shapiro & Wilk, 1965), which also indicated violations of the assumption of normality across all of the variables. Interpretation of statistical tests of normality such as Mardia's test and the Shapiro-Wilk test should be taken with caution when working with a large sample size, due to the well-documented sensitivity of such tests of multivariate normality to even the slightest departures from normality (Kline, 2011; Tabachnick & Fidell, 2013). Following the recommendations of Kline (2011), the absolute value of skewness and kurtosis indices of the individual variables was examined, with absolute values of skew greater than 3.0 indicating extreme skew and absolutely values of kurtosis greater than 10.0 indicating extreme kurtosis. As can be seen in Table 2, none of the observed indicators produced values suggestive of extreme skewness or kurtosis.

Multicollinearity was examined following the recommendations of Kline (2011), by running nine separate multiple regressions, with each variable in turn serving as the criterion variable. Squared multiple correlations, tolerance, and variance inflation factors (VIF) were examined for indications of multicollinearity. As can be seen in Table 2, none of the variables had tolerance values below .10 or VIFs greater than 10 suggesting a low chance of multicollinearity among the variables.

Table 2

Means, Standard Deviations, and Normality Tests of Latent Indicators

	M	*SD*	Skewness	c.r.	Kurtosis	c.r.
bar1	2.28	1.14	.573	5.907	-.713	-3.675
bar2	3.43	1.16	-.398	-4.103	-.698	-3.598
bar3	2.59	1.10	.368	3.794	-.728	-3.753
bar4	2.25	1.09	.693	7.144	-.283	-1.459
ben1	3.51	.99	-.559	-5.763	-.131	-0.675
ben2	3.96	.89	-.881	-9.082	.914	4.711
ben3	3.77	.98	-.699	-7.206	.328	1.691
sus1	3.39	1.23	-.332	-3.423	-.818	-4.216
sus2	3.35	1.23	-.309	-3.186	-.88	-4.536
sus3	3.37	1.12	-.258	-2.660	-.51	-2.629
sus4	3.26	1.09	-.18	-1.856	-.481	-2.479
sev1	3.03	1.24	-.212	-2.186	-1.069	-5.510
sev2	3.03	1.17	-.177	-1.825	-1.058	-5.454
sev3	3.26	1.03	-.139	-1.433	-.525	-2.706
sev4	2.58	1.16	.385	3.969	-.854	-4.402
ghm1	4.24	.73	-.895	-9.227	1.286	6.629
ghm2	4.25	.80	-.972	-10.021	.712	3.670
ghm3	4.15	.72	-.821	-8.464	1.379	7.108
int1	4.21	1.35	-.316	-3.258	-.733	-3.778
int2	4.18	1.38	-.415	-4.278	-.582	-3.000
int3	4.88	1.17	-.813	-8.381	-.136	-0.701
int4	3.41	1.54	.206	2.124	-1.027	-5.294
se.p1	7.29	1.80	-.555	-5.722	-.054	-0.278
se.p2	7.28	1.75	-.438	-4.515	-.272	-1.402
se.p3	7.03	2.00	-.501	-5.165	-.259	-1.335
mhl.p1	0	.58	-.442	-4.557	-.316	-1.629
mhl.p2	0	.53	-.588	-6.062	.181	0.933
mhl.p3	0	.61	-.703	-7.247	.027	0.139
mhl.p4	0	.58	-.424	-4.371	-.498	-2.567
mhl.p5	0	.56	-.705	-7.268	-.047	-0.242

	$\hat{\beta}$	κ	*p*
Multivariate Skewness	77.207	8132.512	< .001
Multivariate Kurtosis	1062.09	29.286	< .001

Note. c.r. = critical ratio, $\hat{\beta}$ = Mardia's Coefficient, κ = test statistic

Descriptive Analysis

Descriptive statistics, including means, standard deviations, reliability coefficients, collinearity diagnostics, and distribution statistics are provided in Table 3. Correlations among the latent variables was extracted from a confirmatory factor analysis (see below) and are reported in Table 4. Figure 1 provides a visual correlation matrix of the observed indicators.

Table 3
Observed Variable Reliability Estimates and Descriptive Statistics

	α	ω	*GLB*	*M*	*SD*	Scale Range	*VIF*
GHM	.73	.74	.76	4.21	.59	1-5	1.66
Benefits	.73	.75	.75	3.76	.70	1-5	1.95
Barriers	.64	.66	.68	2.63	.78	1-5	2.13
Susceptibility	.93	.94	.95	3.37	1.04	1-5	1.67
Severity	.73	.74	.79	2.93	.79	1-5	1.69
Self-Efficacy	.89	.89	.91	7.20	1.67	0-10	2.09
Intent	.84	.85	.88	4.25	1.05	1-6	2.56
MHL	.91	.94	.96	131.58	14.98	35-160	2.19

Note. α = Cronbach's alpha; ω = McDonald's Omega; *GLB* = Greatest Lower Bound reliability; *M* = Mean; *SD* = Standard Deviation; *VIF* = variance inflation factor

Table 4
Latent Factor Correlations

Variables	1	2	3	4	5	6	7
1. GHM							
2. Benefits	.68**						
3. Barriers	-.68**	-.38**					
4. Susceptibility	.02	.45**	.24**				
5. Severity	-.34**	.07	.82**	.41**			
6. Self-Efficacy	.66**	.36**	-.84**	-.19**	-.67**		
7. Intent	.76**	.84**	-.69**	.20**	-.28**	.65**	
8. MHL	.61**	.45**	-.61**	.31**	-.33**	.46**	.50**

* < .01, ** < .001

Model Testing

Preliminary data screening suggested there may have been some departure from the assumption of multivariate normality, albeit marginal. Thus, robust maximum likelihood (MLR) estimation was used across all confirmatory factor analyses and SEM analyses. Robust maximum likelihood estimation produces parameter estimates with Huber-White robust standard errors (Huber, 1967) and a robust test statistic that is asymptotically equivalent to the Yuan-Bentler T-2 star statistic which is more robust to non-normality (Yuan & Bentler, 1998). Two structural regression models were specified, tested, and compared. Model 1 included the six latent factors of the HBM and the Intent factor, with the six HBM factors predicting intentions to seek help (Figure 2). Model 2 was identical to model except for the addition of the mental health literacy factor, modeled as having a direct effect on intentions to seek help as well as an indirect effect through its effects on the HBM factors (Figure 3). Prior to testing the structural regression models, the eight latent factors were respecified and tested as a CFA, to assess the adequacy of the measurement model.

Measurement model. The measurement model overall demonstrated a less than acceptable fit to the data, X^2 (637) = 1943.393, $p < .001$, CFI = .884, TLI = .872, RMSEA = .057 (90% CI [.054, .060]), CFit = .000, SRMR = .073. Goodness-of-fit indices provide a global and descriptive indication of how well (or poorly) the model reproduces the observed relationships among variables. Thus, in order to identify localized areas of strain within the measurement model and to improve the poorly fitting model, model modification indices and residuals were examined.

The residual variance-covariance matrix reflects the difference between the sample (observed) and model-implied matrices. These residuals can be either positive or negative, indicating that the model's parameters underestimate the zero-order relationship between two indicators (positive residual) or that the model's parameters overestimate the relationship between two indicators (negative residual). Brown (2015) and Byrne (2014) suggest a cut-off value of 2.58 (.01 alpha level) when interpreting standardized residuals from larger samples. Using the 2.58 cutoff, 71 indicator pairings were identified as localized areas of ill fit. A number of patterns of problematic items emerged from examining the standardized residual variance-covariance matrix. Two GHM items ("I have regular health check-ups even when I am not sick" and "I eat well balanced meals", three perceived severity items ("The thought of having mental health problems scares me", "If I developed a mental health problem, I would not live as long as the average person", "Difficulties I would experience with mental health problems would last a long time"), one perceived benefits item ("Getting help for mental health problems would make me feel better about myself"), one perceived susceptibility item ("My chances of having mental health problems are great"), and two intent items ("I would see a mental health professional if I were worried or upset for a long period of time", "At some future time, I might want to see a

mental health professional") were identified as being involved in a large number of zero-order relationships that were significantly under- or over-estimated by the model parameters. These same items were also identified as problematic in the examination of modification indices, where these items were found to have salient loadings on latent factors other than the factor they were specified to load onto. Thus, these eight indicators were dropped from further analyses.

The re-specified measurement model was again fitted to the data using robust maximum likelihood CFA. The modified measurement model demonstrated improved fit to the data, X^2 (374) = 904.177, $p < .001$, CFI = .939, TLI = .929, RMSEA = .047 (90% CI [.044, .051]), CFit = .874, SRMR = .049. Standardized residuals and modification indices were again examined for potential areas of localized strain. Both residuals and modification indices continued to suggest issues related to indicators loading onto multiple factors and correlated error variances. 161 paths produced modification indices that were larger than the suggested critical value of 4 (Brown, 2015), ranging from 4.04 to 43.04. However, like the overall model X^2, MIs are sensitive to sample size and may be superficially inflated in large samples. Thus, completely standardized expected parameter change (EPC) values for each MI was examined, revealing that freeing most of these parameters would only result in trivial changes to parameter estimates. The remaining paths with elevated modification indices and EPCs were not ultimately included in the measurement model because they lacked any theoretical justification.

As can be seen from Table 5, all of the paths from indicator variables to their respective latent variables were significant ($p < .001$), with standardized factor loadings ranging from .37 to .90. Table 5 provides the unstandardized and standardized parameter estimates for the final measurement model, along with composite reliabilities (Raykov, 1997) and average variance extracted (AVE) values for each of the latent factors. Five out of eight of the factors had AVEs

that were below .50, and four of those also produced sub-optimal composite reliabilities, further suggesting there may be some measurement issues. However, overall it was determined the measurement model was adequate for the current analysis.

Table 5
Robust Maximum Likelihood Estimates: Standardized Parameter Estimates of the Measurement Model and Latent Factor Reliability

				95% Confidence Interval			
Variables	λ	*SE*	β	Lower	Upper	CR	AVE
General Health						.69	.43
Motivation							
ghm1	1.000	.000	.659	1.000	1.000		
ghm4	1.193	.092	.718	1.013	1.373		
ghm5	.898	.089	.597	.724	1.072		
Perceived Benefits						.64	.38
ben1	1.000	.000	.420	1.000	1.000		
ben2	1.447	.167	.681	1.119	1.774		
ben4	1.775	.205	.753	1.373	2.176		
Perceived Barriers						.65	.32
bar1	1.000	.000	.653	1.000	1.000		
bar2	.585	.071	.374	.446	.723		
bar3	.869	.071	.587	.730	1.007		
bar4	.808	.087	.550	.639	.978		
Perceived Susceptibility						.92	.73
sus1	1.000	.000	.895	1.000	1.000		
sus3	.884	.032	.793	.822	.947		
sus4	.860	.034	.849	.793	.927		
sus5	.841	.033	.850	.776	.906		
Perceived Severity						.67	.36
sev1	1.000	.000	.456	1.000	1.000		
sev2	1.313	.147	.633	1.024	1.602		
sev4	.664	.097	.363	.473	.854		
sev5	1.367	.154	.665	1.066	1.668		
Self-Efficacy						.89	.73
se.p1	1.000	.000	.814	1.000	1.000		
se.p2	1.006	.047	.844	.915	1.098		
se.p3	1.216	.049	.889	1.121	1.312		
Intentions to Seek Help						.78	.48
int1	1.000	.000	.606	1.000	1.000		
int2	1.294	.094	.766	1.109	1.478		
int3	1.071	.069	.745	.935	1.206		
int5	1.206	.088	.639	1.034	1.377		
Mental Health Literacy						.93	.71
mhl.p1	1.000	.000	.850	1.000	1.000		
mhl.p2	.913	.030	.855	.854	.971		
mhl.p3	1.055	.038	.850	.981	1.129		
mhl.p4	.954	.036	.813	.884	1.024		
mhl.p5	.960	.036	.850	.890	1.031		

Note. CR = construct reliability; AVE = average variance explained.

Structural models. Having established the adequacy of the measurement model the hypothesized structural models were tested. Regarding the first hypothesis, a model was tested (Model 1) consisting of the combined contributions of the HBM factors (general health motivation, susceptibility, severity, benefits, barriers, and self-efficacy) in predicting intentions to seek mental health care. Model 1 showed good fit to the data, X^2 (251) = 506.326, $p < .001$, CFI = .957, TLI = .948, RMSEA = .040, 90% CI [.035, .045], CFit =1.000, SRMR = .045. Specifically, the CFI and TLI were both above .95, RMSEA was below .05, and SRMR was below .08. This model accounted for 78% of the variance in Intent scores, (R^2 = .78). Table 6 provides the parameter estimates of Model 1, while Figure 4 provides the standardized solution.

Table 6
Model 1 Robust Maximum Likelihood Estimates: Unstandardized and Standardized Total Effects, Standard Errors, Significance Level, and 95% Bias-Corrected and Accelerated (BCa) Bootstrap CIs

					95% CI	
	B	β	*SE*	*p*	Lower	Upper
GHM -> Intent	-.042	-.025	.134	.755	-.305	.222
Benefits -> Intent	1.053	.538	.238	.000	.587	1.518
Barriers -> Intent	-.515	-.481	.259	.047	-1.023	-.008
Susceptibility -> Intent	.036	.049	.042	.394	-.047	.119
Severity -> Intent	.287	.192	.307	.349	-.314	.888
Self-efficacy -> Intent	.122	.219	.046	.009	.031	.213

Note. B = unstandardized path coefficient, β = standardized path coefficient

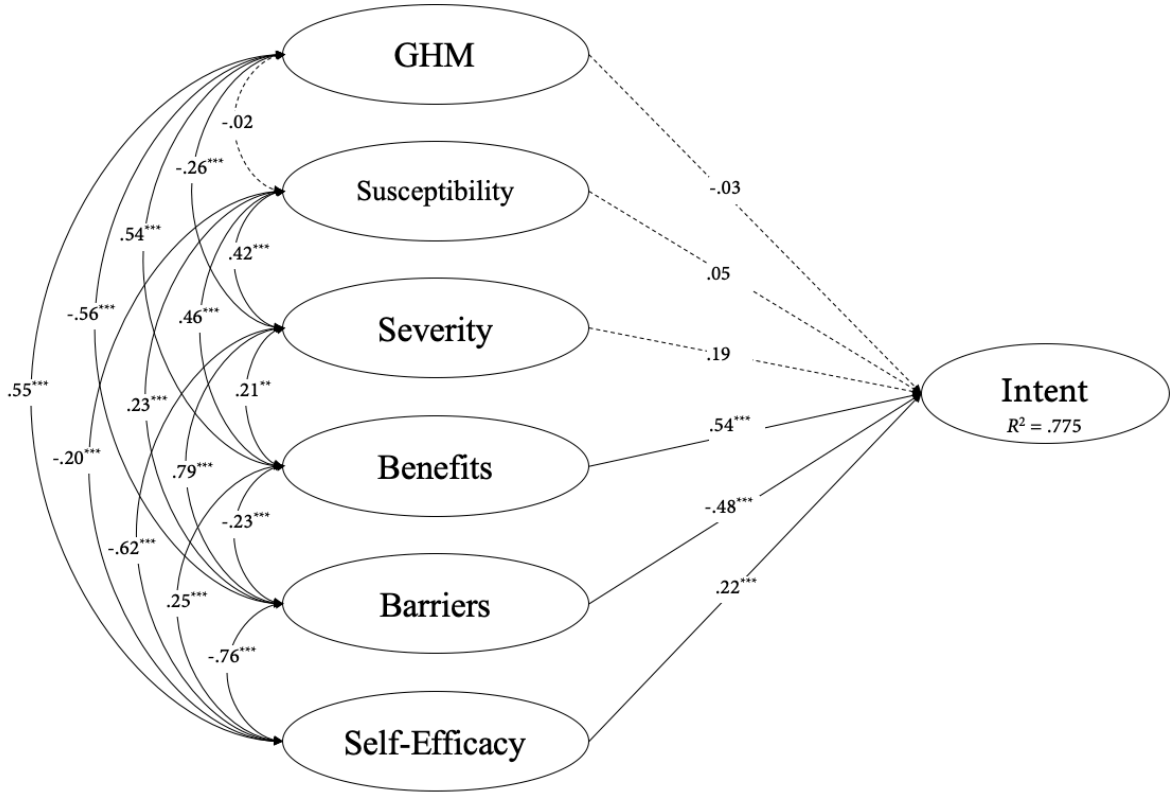

Figure 5. Model 1 standardized path coefficients. Non-significant paths are dashed. The observed indicators with factor loadings and residuals, have been omitted for clarity. * $p < .05$, ** $p < .01$, *** p

Results from Model 1 only partially supported the hypothesis regarding the relationships between the HBM factors and intentions, as only perceived benefits (β = .538, $p < .001$), perceived barriers (β = -.481, $p = .047$), and self-efficacy (β = .219, $p = .009$) were significantly predictive of intentions to seek help. The nature of the relationship of perceived benefits and self-efficacy with intentions to seek mental health care were as expected, that is, the more an individual believes there are benefits to seeking psychological help and believe they are capable of seeking help the more likely they are to seek help. Similarly, as expected, the more barriers to seeking help individuals perceive there to be, the less likely they are to seek help. Contrary to hypotheses, perceived severity, perceived susceptibility, and general health motivation were not directly predictive of intentions.

To test hypothesis 2, a second model (Model 2) was tested to examine the effects of mental health literacy on intentions to seek help, both directly and indirectly via the health belief model factors. This model showed adequate fit to the data, X^2 (377) = 964.066, $p < .001$, CFI = .932, TLI = .922, RMSEA = .050, 90% CI [.046, .053], CFit = .558, SRMR = .050. Model 2 accounted for 77% of the variance in intentions to seek help ($R^2 = .770$). Figure 5 provides the path model with the standardized solution. Table 8 provides the unstandardized and standardized parameter estimates for the direct and indirect effects

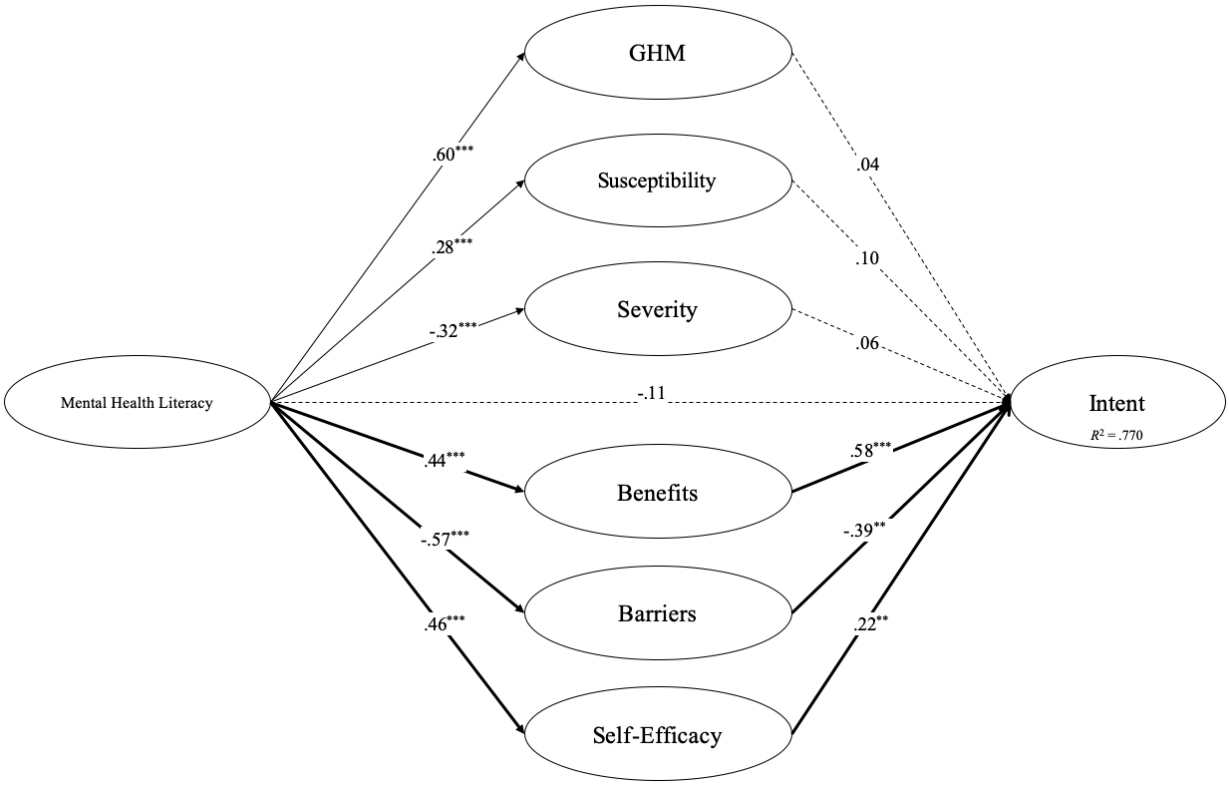

Figure 6. Model 2 standardized path coefficients. Non-significant paths are dotted. Asterisks denote individually significant path coefficients (* $p < .05$, ** $p < .01$, *** $p < .001$). Significant indirect paths are bolded. The observed indicators with factor loadings and residuals, as well as error covariances, have been omitted for clarity.

Contrary to hypotheses, MHL did not have a significant direct effect on intention to seek help (β =-.105, $p = .188$). However, as can be seen in Table 7, there were significant indirect effects of MHL on intentions through MHL's effect on perceived barriers help (β = .225, p =

.005, 95% CI[1] [.112, .634]), perceived benefits (β = .254, $p < .001$, 95% CI [.247, .593]), and help-seeking self-efficacy (β = .101, $p = .004$, 95% CI [.055 .280]). That is, for every .573 decrease in perceived barriers resulting from a one unit increase in MHL, there is a resulting .225 increase in intentions to seek help. For every .438 increase in perceived benefits resulting from a one unit increase in MHL, there is an increase of .101 in intent to seek help. And for every one-unit increase in MHL, there is a resulting .458 increase in self-efficacy, which results in a .254 increase in intentions to seek help.

Table 7
Model 2 Robust Maximum Likelihood Estimates: Unstandardized and Standardized Direct and Indirect Effects, Standard Errors, Significance Level, and Confidence Intervals

					95% CI	
	B	β	*SE*	*p*	Lower	Upper
Self-efficacy -> Intent	.123	.221	.042	.003	.041	0.204
Severity -> Intent	.093	.059	.139	.504	-.179	0.365
Susceptibility -> Intent	.074	.096	.051	.152	-.027	0.174
Barriers -> Intent	-.425	-.393	.147	.004	-.714	-0.137
Benefits -> Intent	1.140	.580	.199	.000	.750	1.530
GHM -> Intent	.060	.035	.139	.665	-.212	.332
MHL -> Intent	-.173	-.105	.131	.188	-.431	.085
MHL -> Self-efficacy	1.363	.458	.133	.000	1.102	1.624
MHL -> Severity	-.337	-.320	.063	.000	-.461	-.213
MHL -> Susceptibility	.616	.284	.089	.000	.441	.791
MHL -> Barriers	-.877	-.573	.085	.000	-1.043	-.712
MHL -> Benefits	.369	.438	.054	.000	.262	.475
MHL -> GHM	.581	.596	.054	.000	.475	.687
Indirect Effects					95% CI[a]	
	B	β	*SE*	*p*	Lower	Upper
MHL -> SE -> Intent	.167	.254	.088	.000	.057	.283
MHL -> Barriers -> Intent	.373	.225	.133	.005	.120	.645
MHL -> Benefits -> Intent	.420	.101	.057	.004	.257	.604
Total Indirect -> Intent	1.010	.610	.129	.000	.717	1.222

Note. B = unstandardized path coefficient, β = standardized path coefficient
[a] = CI based on a Monte Carlo test of mediation

[1] Confidence intervals for indirect effects based on a Monte Carlo test of mediation with 20,000 replications (Mackinnon, Lockwood, & Williams, 2004)

As seen in Table 7, perceived susceptibility, perceived severity, and general health motivation again were not directly predictive of intent to seek help. This was contrary to hypothesis 2, and surprising in light of their zero-order correlations with intent (see Table 4).

In order to further investigate the potential impact of GHM, susceptibility, and severity on intent, another model was created from respecification of the regression paths in Model 2. Respecification was guided by both empirical (Wald *W,* modification indices, standardized residuals) and theoretical considerations. The HBM does not inherently define any specific relationships among the core belief components, a characteristic that has led to a great deal of variation in how the model is operationalized. Indeed, the earliest writings on the HBM (e.g., Rosenstock, 1974; 1990; Rosenstock, Strecher, & Becker, 1988) leave open the possibility of there being a number of possible model configurations.

In his meta-analysis of 18 studies utilizing the HBM, Carpenter (2010) was unable to draw conclusions regarding the relationships between the HBM constructs due to the infrequency with which researchers report the correlations between factors. However, Carpenter did conclude that the inconsistent and weak effects of susceptibility and severity as predictors of behaviors requires future work to examine potential mediation and moderation effects among the HBM variables. Indeed, some research has found significant relationships from perceived susceptibility, perceived severity, and GHM to perceived benefits, perceived barriers, and self-efficacy (Anagnostopoulos et al., 2012; Kim & Zane, 2016; O'Connor et al., 2014; Orji, Vassileva, & Mandryk, 2012). While there is a paucity of strong research examining the ordering of the HBM components within the model, it is conceivable that individuals' perceptions regarding the benefits of mental health care, their ability to engage in seeking mental health care, and the potential barriers of seeking that care, only become relevant and salient when faced with

a mental health threat that is due to an increased perception that they are susceptible and that there are significant consequences to not getting mental health care. Along with this same logic, it is conceivable that individuals' level of GHM and MHL inform their perceptions of the potential benefits and barriers to seeking help and an increase in this knowledge or literacy, they may experience greater feelings of self-efficacy.

The respecification of the susceptibility, severity, GHM, and MHL pathways was not only informed by theory but also supported empirically. When the direct pathways from susceptibility, severity, GHM, and MHL to intention to seek mental health care are constrained to zero there is no considerable decrement in the overall fit of the model (Wald's $W_{(4)} = 2.778$, $p = .596$), suggesting these pathways should be trimmed from the model. However, given the significant zero-order correlations of intentions with these four variables, it is possible that their relationship is actually indirect. Thus, the respecification of Model 2 into Model 3 specified intent as directly predicted by perceived benefits, perceived barriers, and self-efficacy, and indirectly predicted by GHM, MHL, perceived susceptibility, and perceived severity, through their effects on perceived benefits, perceived barriers, and self-efficacy (Figure 6).

Results showed an acceptable fit of the model to the data, X^2 (381) = 967.287, $p < .001$, CFI = .932, TLI = .923, RMSEA = .049, 90% CI [.046, .053], CFit = .609, SRMR = .050. Figure 6 provides the standardized estimates and Table 8 provides standardized and unstandardized direct and indirect parameter estimates. Model 3 accounted for 76% of the variance in intention ($R^2 = .763$), 55% of the variance in perceived benefits ($R^2 = .547$), 67% of the variance in perceived barriers ($R^2 = .672$), and 51% of the variance in self-efficacy ($R^2 = .512$). As expected, perceived benefits ($\beta = .646$, $p < .001$), barriers ($\beta = -.240$, $p = .001$), and self-efficacy ($\beta = .131$, $p = .001$) were directly predictive of intentions. As can be seen in Table 9, GHM, MHL,

perceived susceptibility, and perceived severity all exerted an indirect effect on intent through at least one of the hypothesized mediators.

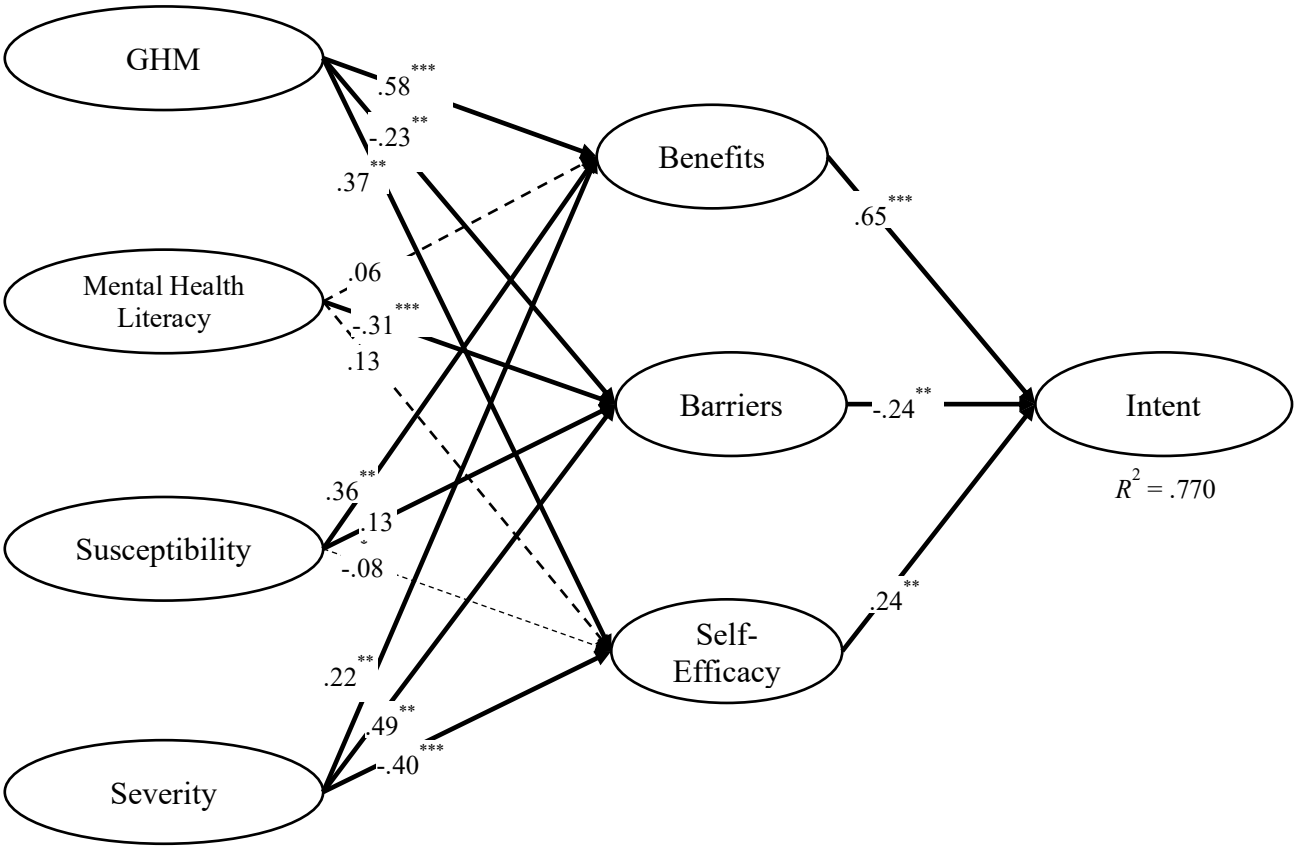

Figure 7. Model 3 standardized path coefficients. Non-significant paths are dotted. Asterisks denote individually significant path coefficients (* $p < .05$, ** $p < .01$, *** $p < .001$). The observed indicators with factor loadings and residuals, as well as error covariances, have been omitted for clarity.

Table 8

Model 3 Robust Maximum Likelihood Estimates: Unstandardized and Standardized Direct and Indirect Effects, Standard Errors, Significance Level, and Confidence Intervals

					95% CI	
Direct Effects	*B*	β	*SE*	*p*	Lower	Upper
Benefits -> Intent	1.276	.646	.153	< .001	.976	1.576
Barriers -> Intent	-.259	-.240	.075	< .001	-.406	-.111
Self-Efficacy -> Intent	.131	.236	.039	< .001	.055	.208
GHM -> Benefits	.496	.575	.096	< .001	.309	.684
GHM -> Barriers	-.362	-.229	.107	< .001	-.572	-.151
GHM -> Self-Efficacy	1.137	.373	.213	< .001	.720	1.554
MHL -> Benefits	.048	.058	.071	.495	-.091	.188
MHL -> Barriers	-.480	-.312	.108	< .001	-.691	-.269
MHL -> Self-Efficacy	.391	.131	.209	.062	-.019	.801
Susceptibility -> Benefits	.141	.361	.028	.000	.085	.196
Susceptibility -> Barriers	.095	.133	.042	.024	.012	.178
Susceptibility -> Self-Efficacy	-.116	-.084	.069	.094	-.252	.020
Severity -> Benefits	.178	.222	.059	.003	.062	.294
Severity -> Barriers	.713	.487	.131	.000	.455	.970
Severity -> Self-Efficacy	-1.127	-.398	.179	.000	-1.478	-.775
Indirect Effects	*B*	β	*SE*	*p*	Lower[a]	Upper[a]
GHM->Benefits->Intent	.633	.372	.115	.000	.407	.859
GHM->Barriers->Intent	.094	.055	.040	.020	.027	.186
GHM->Self-Efficacy->Intent	.149	.088	.056	.007	.053	.272
GHM Total Indirect	.876	.515	.141	.000	.599	1.156
MHL->Benefits->Int	.062	.037	.091	.495	-.121	.245
MHL->Barriers->Intent	.124	.075	.042	.003	.049	.215
MHL->Self-Efficacy->Intent	.051	.031	.029	.074	-.005	.108
MHL Total Indirect	.237	.143	.112	.034	.018	.457
Susceptibility->Benefits->Intent	.179	.234	.037	.000	.106	.253
Susceptibility->Barriers->Intent	-.025	-.032	.012	.048	-.049	.000
Susceptibility->Self-Efficacy->Intent	-.015	-.020	.009	.101	-.033	.003
Susceptibility Total Indirect	.139	.182	.042	.001	.057	.222
Severity->Benefits->Intent	.227	.144	.075	.002	.081	.373
Severity->Barriers->Intent	-.185	-.117	.062	.003	-.307	-.062
Severity->Self-Efficacy->Intent	-.148	-.094	.049	.003	-.244	-.052
Severity Total Indirect	-.106	-.067	.084	.209	-.271	.059
Total Indirect Effects	1.147	.772	.146	.000	.861	1.434

Note. B = unstandardized path coefficient, β = standardized path coefficient

[a] = CI based on a Monte Carlo test of mediation

Model comparisons. Table 9 provides the fit indices and indices of change across the 3 models tested. Contrary to hypotheses, the addition of mental health literacy did not result in any meaningful improvement in the amount of variance in intentions explained. Indeed, the addition of MHL in the model was actually a detriment to the fit indices, likely as a result of increased model complexity without a commensurate increase in explanatory power. Thus, in the current sample, Model 1 provided the best fit to the data over Model 2 (adding MHL as a predictor) and Model 3 (modeling of alternative relationships between HBM factors and MHL).

Table 9

Model Comparisons Across Global Indices of Fit

	Model 1	Model 2	Model 3
df	251	377	381
X^2	506.326	964.066	967.287
Δdf		126	130
ΔX^2		457.74	3.221
CFI	.957	.932	.932
ΔCFI		-.025	-.025
TLI	.948	.922	.923
AIC	43262.434	46042.201	46037.515
ΔAIC		2779.767	2775.081
BIC	43591.652	46433.703	46411.221
ΔBIC		2842.051	2819.569
RMSEA	.04	.05	.049
CFit	1.00	.558	.609
SRMR	.045	.050	.050
R^2 Intent	.775	.770	.763

As reported above, the measurement model demonstrated good global-level fit to the data, while exhibiting some localized areas of strain, evidenced by large standardized residuals and modification indices. Indeed, the large standardized residuals and questionable modification indices from the final measurement model suggest the presence of misspecification and

multicollinearity in the measurement model. It is possible that issues impacting the measurement model are causing degradation in the structural models that is prohibiting an accurate comparison of the hypothesized structural models. McDonald and Ho (2002) and McDonald (2010) argue for a SEM methodology where assessment of measurement models and structural models are carried out separately, in order to prevent measurement model quality of fit from impacting the results and interpretation of structural models.

To that end, the structural paths for each of the hypothesized models were tested separate from their measurement models as recommended by McDonald (2010). That is, the path models were fit to their respective factor correlation matrices. The three path models were tested and compared, reflecting the hypothesized prediction of intentions to seek mental health care by the HBM variables (Model 4), the HBM variables as mediators of the relationship between MHL and intentions to seek mental health care (Model 5), and intentions to seek mental health care as predicted directly by benefits, barriers, and self-efficacy, and indirectly predicted by general health motivation, MHL, severity, and susceptibility, through their effects on benefits, barriers, and self-efficacy (Model 6). Appendix B provides the results of the analyses of these Models.

While robust maximum likelihood (MLR) estimation was used for testing Models 1, 2, and 3, this was not possible for testing Models 4, 5, and 6, due to the models being fit to the latent factor correlation matrices produced by their respective measurement model, rather than the full data. Standard maximum likelihood estimation (ML) was used to obtain parameter estimates for the path models. Results are presented in Tables 10, 11, and 12 and the standardized solutions are depicted in Figures 7, 8, and 9, located in appendix B. Model 4 is just-identified, as such, no global fit indices could be calculated. Five of the six HBM components, susceptibility ($\beta = .05$, $p = .024$), severity ($\beta = .24$, $p < .001$), benefits ($\beta = .52$, $p < .001$), barriers

(β = -.53, $p < .001$), and self-efficacy (β = .22, $p < .001$) were found to be significant predictors of intention to seek mental health care, explaining 78% of the variance in intentions ($R^2 = .778$). Results of Model 4 are comparable to those obtained in the analysis of Model 1, except for the addition of two significant pathways, perceived severity and perceived susceptibility (although relatively weak). The amount of variance explained was nearly identical across both models.

Like Model 4, the analyses of Models 5 and 6 produced results commensurate with Models 2 and 3, respectively. The analysis of Model 5 found support for a significant direct effect of susceptibility and severity on intentions to seek mental health care. In addition to those two new significant pathways, Model 5 also demonstrated a significant direct path from MHL to intentions to seek mental health care. Contrary to hypotheses however, this path was found to be negative, indicating that individuals with higher mental health literacy were less likely to report intentions to seek mental health care. However, it is likely that this is an artifact of the analysis, given that the much more salient indirect effects of MHL on intentions are in the expected directions. Again, like Models 4 and 5, Model 6 was congruent with what was found for the identical latent variable model (Model 3). Significant direct pathways from benefits, barriers, and self-efficacy, which served as mediators through which general health motivation, MHL, susceptibility, and severity predict intentions to seek mental health care.

Table 10 provides model comparison data from these models, including chi-square values, Akaike's information criterion (AIC), Bayesian information criterion (BIC), and Haughton's BIC (HBIC; Haughton, 1988; Lin, Huang, & Weng, 2017). As can be seen from Table 10, Model 5 accounted for 1.1% more of the variance in intentions to seek mental health care compared to Model 4 and 2.4% more variability compared to Model 6. However, model fit indices suggest that Model 4 is the best fitting model for its limited complexity and

Table 10

Model Fit

Models	X^2	*df*	AIC	ΔAIC	BIC	ΔBIC	HBIC	ΔHBIC	R^2	ΔR^2
M4	0	0	6397.83		6428.97		3205.93		.778	
M5	1.126	1	6681.42	283.59	6832.68	403.71	3374.80	168.87	.789	0.011
M6	55.108	4	6731.40	333.57	6873.77	444.80	3401.79	195.86	.765	-0.013

commensurate squared multiple correlation. Overall, the estimation of the parameters of the path models separate from their measurement models suggested that issues in the measurement model at least partially suppressed the relationship between perceived susceptibility and intentions, as well as the relationship between perceived severity and intentions. While the path models included the significant relationships between intentions and susceptibility and severity, the model containing only the HBM components (Model 4) was still the best fitting model, consistent with the analyses of the structural models (Models 1, 2, and 3).

Thus, in the current study, the model predicting intentions to seek mental health services from only the HBM components (Models 1 and 4; general health motivation, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy) was the best fitting model due to its parsimony while accounting for a large amount of variability in intentions.

Measurement invariance. Multigroup CFAs (MGCFA) were performed using the *Lavaan* package for R, using the same robust maximum likelihood estimation procedure as used in the previous analyses. Results of the MGCFA are presented in Tables 10, 11, and 12. First, the CFA model was fit separately to each subgroup. That is, the full measurement model was fit to data from male identifying participants alone, female identifying participants alone, participants who reported previous help seeking alone, participants who reported no previous help-seeking alone, participants who reported low levels of distress alone, and participants who reported high

or elevated levels of distress alone. As can be seen in Tables 12-14, all six models evidenced adequate fit to the data, indicating that model-to-data fit between separate subgroups was similar to that for the overall sample.

In the second step of invariance assessment, configural invariance was assessed by conducting three completely unconstrained CFAs, one identifying gender as the grouping variable, another identifying previous help-seeking as the grouping variable, and the third identifying level of distress as the grouping variable. As seen in Tables 12, 13 and 14, the configural invariance (or equal form) solution provided good fit to the data across all three MGCFAs. That is, the factor structure appears to be the same across both men and women, across individuals with a history of help-seeking and those without a history of help-seeking, and across those with low and high distress. Having established support for configural invariance, the third step of the invariance assessment sought to establish metric invariance. This involved fitting a model that constrained the factor loadings to be equal across groups. A significant decrement in model fit between the metric invariance model and the configural invariance model would suggest metric non-invariance. Significant changes in model fit was assessed using a variety of indices, including: the Satorra-Bentler scaled differences chi-square test (Satorra & Bentler, 2001) and the comparative fit index (CFI). Cheung and Rensvold (2002), suggested changes in CFI of -.01 or more is indicative of significant decrement in model fit. While there is little consensus on interpretive guidelines (see Putnick & Bornstein, 2016) changes in two other alternative fit indices were also examined, the root mean square error of approximation (ΔRMSEA < .015), and standardized root mean-square residual (ΔSRMR < .03, for metric invariance tests, and ΔSRMR < .01 for scalar invariance tests). As seen in the tables, the model was found to be metric invariant across all of the identified groups.

Scalar invariance was assessed next by adding a constraint to the indicator intercepts and comparing the fit of this model with the metric invariant model (with only a constraint on the factor loadings). As seen from tables, results from analyses indicated good model fit that was not significantly different from the metric invariance model. Indicating the measurement model has scalar invariance. Finally, strict factor invariance was assessed by comparing the fit of a model with equality constraints on factor loadings, indicator intercepts, and indicator residual variances, with the fit of the scalar invariance model. This model also produced good fit indexes that were not significantly different from the previous model, indicating the measurement model has strict factor invariance across men and women, across participants with and without a history of help-seeking, and across individuals experience low distress and individuals experiencing elevated distress. Overall, the measurement model appears to be invariant across the three identified subgroups from within the larger study sample. That is, there do not appear to be any between-group differences in the patterns of factor loading (configural invariance) or the strength of the association between the indicators and the latent constructs (metric invariance), and difference between groups on the means of the indicators are related to between-group differences on the underlying constructs (scalar invariance).

Table 11

Tests of Measurement Invariance and Latent Means Analysis in Individuals With and Without Previous Help-Seeking

Model	X^2 (*df*)	CFI	RMSEA	SRMR	Model Comp.	ΔX^2 (Δdf)	ΔCFI	ΔRMSEA	ΔSRMR	Decision
Single-group solutions										
No previous counseling (n = 225)	643.45 (377)	.919	.056	.068	-					
Previous Counseling (n = 407)	738.66 (377)	.926	.049	.051	-					
Measurement Invariance										
M1: Configural invariance	1383.49 (754)	.923	.051	.057	-					
M2: Metric Invariance	1404.12 (776)	.923	.051	.059	M1	21.86^{ns} (22)	0	0	.002	Accept
M3: Scalar Invariance	1487.36 (798)	.915	.052	.060	M2	85.44^{***} (22)	-.008	.001	.001	Accept
M4: Strict Invariance	1535.45 (828)	.912	.052	.062	M3	49.86^{*} (30)	-.003	0	.002	Accept
Population Heterogeneity										
M5: Equal Factor Variances	1553.75 (836)	.911	.052	.072	M4	67.12^{**} (38)	-.004	0	.012	Accept
M6: Equal Factor Covariances	1621.06 (864)	.906	.053	.082	M5	66.93^{***} (28)	-.005	.001	.010	Accept
M7: Equal Factor Means	1786.91 (872)	.887	.058	.117	M5	230.89^{***} (36)	-.019	.006	.045	Reject

Note: N=632; Model Comp. = comparison model; ΔX^2 = nested x^2 difference; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. *** $p < .001$, ** $p < .01$, * $p < .05$, ns = non-significant

Table 12
Tests of Measurement Invariance and Latent Means Analysis in Male and Female Identifying Participants

Model	X^2 (*df*)	CFI	RMSEA	SRMR	Model Comp.	ΔX^2 (Δdf)	ΔCFI	ΔRMSEA	ΔSRMR	Decision
Single-group solutions										
Males (n = 152)	599.26 (377)	.910	.062	.070	-					
Females (n = 480)	837.44 (377)	.927	.050	.051	-					
Measurement Invariance										
M1: Configural invariance	1443.97 (754)	.922	.054	.055	-					
M2: Metric Invariance	1452.78 (776)	.924	.053	.055	M1	9.51^{ns} (22)	.002	-.001	0	Accept
M3: Scalar Invariance	1492.26 (798)	.922	.052	.056	M2	39.35^{*} (22)	-.002	-.001	.001	Accept
M4: Strict Invariance	1533.37 (828)	.920	.052	.057	M3	44.77^{*} (30)	-.002	0	.001	Accept
Population Heterogeneity										
M5: Equal Factor Variances	1543.77 (836)	.920	.052	.062	M3	54.88^{*} (38)	-.002	0	.006	Accept
M6: Equal Factor Covariances	1577.83 (864)	.919	.051	.063	M5	33.87^{ns} (28)	-.001	-.001	.001	Accept
M7: Equal Factor Means	1630.59 (872)	.914	.052	.070	M5	87.23^{***} (36)	-.005	0	.008	Accept

Note: N=632; Model Comp. = comparison model; ΔX^2 = nested x^2 difference; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. *** $p < .001$, ** $p < .01$, * $p < .05$, ns = non-significant

Table 13

Tests of Measurement Invariance and Latent Means Analysis in Low and High Distress Participants

Model	X^2 (*df*)	CFI	RMSEA	SRMR	Model Comp.	ΔX^2 (Δdf)	ΔCFI	ΔRMSEA	ΔSRMR	Decision
Single-group solutions										
Low Distress (n = 331)	698.35 (377)	.929	.051	.052	-					
High Distress (n = 301)	690.24 (377)	.928	.053	.057	-					
Measurement Invariance										
M1: Configural invariance	1388.49 (754)	.928	.052	.054	-					
M2: Metric Invariance	1400.83 (776)	.929	.050	.056	M1	12.19^{ns} (22)	.001	-.002	.002	Accept
M3: Scalar Invariance	1423.81 (798)	.929	.050	.056	M2	21.79^{ns} (22)	0	0	0	Accept
M4: Strict Invariance	1456.60 (828)	.928	.049	.057	M3	37.40^{ns} (30)	-.001	-.001	.001	Accept
Population Heterogeneity										
M5: Equal Factor Variances	1469.05 (836)	.928	.049	.068	M3	48.90^{ns} (38)	-.001	-.001	.012	Accept
M6: Equal Factor Covariances	1498.27 (864)	.928	.048	.069	M5	29.58^{ns} (28)	0	-.001	.001	Accept
M7: Equal Factor Means	1506.32 (872)	.928	.048	.070	M5	7.65^{ns} (8)	0	0	.002	Accept

Note: N=632; Model Comp. = comparison model; ΔX^2 = nested x^2 difference; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. *** $p < .001$, ** $p < .01$, * $p < .05$, ns = non-significant

Latent means analysis. Having established full scalar measurement invariance across identified groups, it was deemed appropriate to utilize a multigroup CFA to compare mean scores on latent variables between groups that have been found to differ in help seeking attitudes and intentions ~~as specified in hypothesis 4~~. Specifically, means were compared across men and women, across individuals who have previously sought help and those who have not, and across individuals reporting a low level of psychological distress and those reporting a moderate-to-high level of psychological distress. Latent means analysis was performed by constraining the latent means of one group to zero (the reference group) while allowing the latent means of the other group to be freely estimated. This freely estimated value represents the differences in latent means between the two groups. Results of the latent means analysis are presented in Table 13. Because there were no significant differences in latent means across low and high distress groups, those results have been omitted from the table.

Table 14
Result of Latent Mean Analysis

Construct	No Previous Help-seeking	Previous Help-Seeking	Effect Size (*d*)
GHM	0	.269*	.583
Benefits	0	.315*	.819
Barriers	0	-.264*	.356
Susceptibility	0	.799*	.802
Severity	0	-.067	.131
Self-Efficacy	0	.653*	.459
Intent	0	.583*	.762
MHL	0	.418*	.932
Construct	Female	Male	Effect Size (*d*)
GHM	0	-.185*	.392
Benefits	0	-.147*	.361
Barriers	0	.244*	.328
Susceptibility	0	-.037	.035
Severity	0	.019	.037
Self-Efficacy	0	-.293*	.201
Intent	0	-.217*	.269
MHL	0	-.315*	.666

Note. The latent mean value for individuals without a history of help-seeking and for women were set to zero (referent groups). Sign of difference statistic indicates group mean in comparison with the referent group. * significant at the $p < .05$ level

As can be seen from Table 13, there were significant differences in latent means between males and females, as well as between individuals with previous help-seeking experiences and those without previous experiences. In order to better facilitate interpretation of mean differences, Cohen's *d* effect size index (Cohen, 1988) was computed by dividing the difference in group latent means by the square root of the group latent variance, as suggested by Hancock (2001). Values of .20 to .50 were interpreted as *small* effects, .50 to .80 as *medium* effects, and .80 and up as *large*. Regarding differences between individuals with and individuals without previous help-seeking experiences, individuals with prior experiences perceived significantly fewer barriers to treatment (-.264, *d* = .356), and reported greater general health motivation (+.269, *d* = .583), perceived more benefits to seeking help (+.315, *d* =.819), perceived themselves as being more susceptible to mental illness (+.799, *d* = .802), reported more confidence in their ability to seek help (+.653, *d* =.459), indicated greater MHL (+.418, *d* = .932), and ultimately reported greater intentions to seek help (+.583, *d* = .762).

Regarding the comparison between male and female participants, results of the LMA suggested that men tended to score significantly lower in general health motivation (-.185, *d* =.392), perceived fewer benefits to seek help (-.147, *d* = .361), had lower confidence in their ability to effectively seek help (-.293, *d* = .201), scored lower in MHL (-.315, *d* = .666), and ultimately reported being significantly less likely to seek help (-.217, *d* =.269). These findings were consistent with the hypotheses regarding the relationship between previous help-seeking experiences and beliefs and attitudes related to future help-seeking and the hypotheses regarding the impact of gender on beliefs and attitudes towards help-seeking. Contrary to hypotheses, individuals with low levels of psychological distress did not differ significantly on any of the latent factors from individuals with higher levels of psychological distress.

Discussion

Guided by social-cognitive theories of health behavior, the purpose of this study was to test competing models of help-seeking behaviors. One model contained only the factors native to the health belief model (HBM): perceived susceptibility, perceived severity, perceived benefits, perceived barriers, general health motivation, and self-efficacy. The second model added a mental health literacy (MHL) factor as a predictor of the HBM components and intention to seek help. Based on results obtained from the first two models, a third model was specified and tested. The third model included perceived benefits, perceived barriers, and self-efficacy as direct predictors of intentions, while general health motivation, MHL, perceived susceptibility, and perceived severity were modeled as indirect predictors of intentions through their effects on perceived benefits, perceived barriers, and self-efficacy. In order to examine the potential moderating effects of gender, previous help-seeking experiences, and level of psychological distress, latent means analysis (LMA) was used to compare the means of latent factors across males and females, individuals with and without prior experiences of seeking help, and individuals who reported low levels of distress and individuals who reported a higher level of distress. As a requirement of LMA, measurement invariance was also examined. The major findings from the present study are outlined below, followed by their convergence and divergence from previous studies, and a discussion of the implications and limitations of the current study.

Hypothesis 1. *Intentions to seek help will be significantly positively associated with GHM, perceived benefits, perceived susceptibility, perceived severity, self-efficacy, and MHL, and significantly negatively associated with perceived barriers.* Results partially supported hypothesis 1. Examination of the zero-order correlations between the latent factors indicated that,

consistent with hypotheses, greater general health motivation, more perceived benefits, more perceived susceptibility, greater self-efficacy, greater MHL, and lower perceived barriers were significantly related to greater intentions to seek help. Contrary to hypotheses, greater perceived severity was significantly related to lower intentions to seek help. Examination of the individual path coefficients in a model specifying direct pathways from the HBM components and MHL to intentions and indirect pathways from MHL to intentions through the HBM components (Model 2) indicated mixed support for the hypothesis again. Specifically, only three variables were found to be significantly predictive of intentions, perceived benefits, perceived barriers, and self-efficacy. That is, individuals are more likely to seek help in so far as they perceive there to be benefits to seeking help, feel confident in their ability to seek help, and perceive there to be few barriers that could prevent them from seeking help. Contrary to the observed zero-order correlations, pathways from general health motivation, perceived susceptibility, perceived severity, and MHL to intentions were all nonsignificant.

The salience of perceived benefits and perceived barriers in predicting intentions in the current study is consistent with the findings from Carpenter's (2010) meta-analysis of the HBM literature concerning physical health behaviors. Carpenter concluded that across studies using the HBM to predict physical health behaviors, perceived benefits and perceived barriers were consistently the strongest predictors. These results are also consistent with O'Connor et al. (2014) who examined the utility of the HBM in predicting help-seeking intentions among college students. Using multiple regression analyses, O'Connor et al. found that only perceived benefits and perceived barriers were significant predictors of intentions. Indeed, the role of perceived benefits as a robust predictor has been demonstrated across many studies (e.g., Kim & Zane, 2016; Langley et al., 2017). Additionally, the significant role of self-efficacy in predicting help-

seeking intentions was consistent with previous studies (Holmes, Hughes, & Morrison, 2014), and consistent with both the TPB and the HBM.

The finding of nonsignificant pathways from general health motivation, perceived susceptibility, and perceived severity to intentions to seek help is surprising. In the case of perceived susceptibility, rationally, the perception of susceptibility or perceiving that one is at risk for developing a mental disorder should predict action against such a risk (i.e., help-seeking). Put another way, it seems rational that individuals who have the greatest need of services (i.e., are most susceptible) would be most likely to seek help. However, in the current sample this was not the case, which is consistent with the findings of other studies (e.g., Kim & Zane, 2016; Langley et al., 2017). O'Connor et al. (2014) reported results indicating that the relationship between susceptibility and intentions was moderated by perceived benefits and general health motivation. However, this interaction effect was not replicated in Langley et al.'s (2017) sample. While not examined in the current study, the interaction of perceived susceptibility with general health motivation and perceived benefits makes sense given what is known about the impact of psychological distress on motivation and perceptions. It is well known, for example, that depressed individuals by definition struggle with neurovegetative symptoms that impair their motivation to maintain healthy behaviors and the demoralization can result in a perception that there is no hope for remittance and thus no benefit to seeking help (e.g., Thomas, Luther, Zullo, Beck, & Grant, 2016). Those who need help the most, or are most susceptible, are likely most negatively affected by low perceived treatment benefits and a lack of general health motivation.

While the HBM is vague regarding how susceptibility and severity contribute to a threat factor, it is also vague in regard to the relationships among the separate HBM constructs. While

not explicitly examined, Model 3 in the current study suggests a relationship between the HBM constructs of perceived threat (susceptibility X severity) and perceived benefits/perceived barriers. This is consistent with previous suggestions in the literature (e.g., Henshaw & Freedman-Doan, 2009) that the strength of the predictive power of perceived benefits and perceived barriers is likely a function of the perceived threat, in that when an individual perceives very little threat from a mental illness, the perceived benefits and barriers to seeking help should not be salient (and vice versa). The lack of a significant direct relationship between severity and intentions to seek help is consistent with Mojtabai, Olfson, and Mechanic (2002), who examined the relationship between perceived need for help and help-seeking among adults in the National Comorbidity Survey from 1990-1992. Their results suggest that once an individual perceives that they are in need of some form of professional help, the form and severity of their mental health concern does not affect the actual decision to seek help.

Bistricky et al. (2017) reported a significant role for general health motivation in predicting four of five stress reduction techniques, the current study did not find a significant direct relationship between general health motivation and intentions. This is especially interesting because the same instrument (the HBMI) was used to assess HBM constructs in each study, reducing the likelihood that differences are due to characteristics of measurement. It is possible that general health motivation is a stronger predictor when the target behavior is especially concrete, like “focused breathing”, “meditation”, “progressive muscle relaxation”, and “yoga”, as in Bistricky et al.’s study. In contrast, the behavior of seeing a mental health professional has the potential to be interpreted as vague and is inherently a non-physical activity, and thus more abstract in nature.

Hypothesis 2. *Help-seeking self-efficacy, perceived barriers, perceived benefits, perceived susceptibility, perceived severity, and general health motivation will partially mediate the relationship between mental health literacy and help-seeking intentions.* Results from the SEM analysis of Model 2 indicated there were significant indirect pathways between MHL and intentions to seek help. However, contrary to hypothesis 2, not all HBM factors served as mediators between MHL and intentions. Self-efficacy, perceived barriers, and perceived benefits were all found to fully mediate the relationship between MHL and intentions, with the direct path from MHL to intentions nonsignificant. In other words, results from the mediation analyses indicate that increases in MHL results in an increase in self-efficacy, an increase in perceived benefits, and a decrease in perceived barriers, which all result in an increase in intentions to seek help. That is, increased MHL predicts increased intentions to seek help due to MHL's effects on perceived benefits, perceived barriers, and self-efficacy. Contrary to hypothesis 2, perceived susceptibility, perceived severity, and general health motivation were not mediators of the relationship between MHL and intentions. As found in the analysis of Model 1, these three components of the HBM did not directly predict help-seeking intentions in the analysis of Model 2.

The lack of a direct relationship between MHL and intentions was also highly surprising and is contrary to findings from previous research. It is possible that previous research has utilized measures tapping into attitudes towards seeking help rather than intentions to seek help and this may explain the divergent findings. For example, Jung, von Sternberg, and Davis (2017) examined the relationship between MHL and attitudes toward mental health help-seeking, along with other factors associated with help-seeking. Results from structural equation modeling found a significant direct relationship from MHL to attitudes that was large and positive, suggesting

greater MHL predicts more positive attitudes towards help-seeking. However, in a study aimed at predicting help-seeking intentions, rather than help-seeking attitudes, Smith and Shochet (2011) reported the results of a multiple regression analysis that found significant relationships between MHL components and help-seeking intentions, specifically knowledge about interventions, knowledge about affordability, knowledge about confidentiality, and beliefs about mental illness. Similarly, Thompson et al. (2004) in a sample of 233 Australian adults, found low mental health literacy was the most frequently endorsed reason for delays in seeking treatment. Thus, it appears that while in the current study the notion of a direct relationship between MHL and intentions was not discovered, there is ample support for the relationship in the literature. The discrepancy may be related to the current study's inclusion of MHL in a model containing other factors that share portions of explained variance in intentions. That is, previous research may have found support for a direct relationship between MHL and intentions because their analysis did not include variables through which the effects of MHL are channeled, leaving the impression of a direct relationship. The findings of the current study suggest that knowledge does not necessarily translate into action, at least not directly. Instead, mental health literacy predicts better knowledge of the benefits of seeking help, fewer perceived barriers to seeking help, and a greater level of confidence in one's ability to seek help, ultimately leading to an increase in the likelihood of seeking help. Additional research is needed to further test the hypothesized pathways presented in Models 2 and 3.

Hypothesis 3. *The model integrating the HBM factors and mental health literacy (Model 2) will explain more variance in help seeking intentions and fit the data better than the model containing the HBM factors alone (Model 1).* Model comparisons found no support for hypothesis 3, with fit indices indicating that Model 1 was a better and more parsimonious fit to

the data compared to Model 2. The addition of the five MHL item parcels and the MHL latent factor significantly increases the number of parameters to be estimated and by extension the complexity of the model. The increase in model complexity and the absence of improved explanatory power resulted in a model with weaker model fit indices and an unchanged squared multiple correlation, indicating no additional variance in intentions was accounted for with the inclusion of MHL.

Model 3. An alternative model to Model 2 was constructed based on previous work (e.g., Carpenter, 2010; O'Connor, et al., 2014; Rosenstock, Strecher, & Becker, 1988) and examination of Wald's *W* produced by constraining to zero the nonsignificant pathways in Model 2, which provides an indication of which pathways can be trimmed without impacting the model fit. Model 3 specified direct pathways from perceived benefits, perceived barriers, and self-efficacy to intentions to seek help. Additionally, direct pathways were specified from general health motivation, perceived susceptibility, perceived severity, and MHL to perceived benefits, perceived barriers, and self-efficacy. Results of the robust maximum likelihood SEM analysis indicated acceptable model fit, with the model explaining 77% of the variance in intentions to seek help. The mediators, benefits, barriers, and self-efficacy, all directly predicted intentions to seek help, with benefits being the strongest predictor, with a standardized path coefficient nearly two-and-a-half times as large as the coefficients for self-efficacy and barriers. Self-efficacy and barriers were equally predictive of intentions.

Perceived benefits was directly predicted by general health motivation, perceived susceptibility, and perceived severity. Specifically, individuals were more likely to see benefits to seeking help in so far as they had greater general health motivation, perceived themselves to be at an increased risk for developing a mental illness, and believed there to be significant

consequences to having a mental illness. Perceived barriers were directly predicted by general health motivation, MHL, susceptibility, and severity. That is, individuals with higher general health motivation and higher MHL were more likely to perceive fewer barriers to seeking mental health care. Conversely, individuals were likely to perceive fewer barriers to seeking help when they did not feel particularly threatened by a mental illness (i.e., low perceived susceptibility, low perceived severity). Finally, self-efficacy was predicted by general health motivation and perceived severity, such that individuals who reported lower perceived severity of mental illnesses and higher general health motivation were more likely to report more confidence in their ability to seek help.

All four distal predictors (general health motivation, MHL, perceived susceptibility, and perceived severity) were found to have significant indirect effects on help-seeking intentions through at least one of the three proximal predictors (perceived benefits, perceived barriers, and self-efficacy). Specifically, with regards to general health motivation, an increase in general health motivation predicted an increase in help-seeking intentions through decreases in perceived barriers and increases in perceived benefits and self-efficacy. With regard to MHL, an increase in MHL predicted an increase in help-seeking intentions only through decreases in perceived barriers, with no indirect effect through perceived benefits or self-efficacy. With regard to perceived susceptibility, an increase in susceptibility predicted an increase in help-seeking intentions through increases in perceived benefits. Conversely, an increase in susceptibility predicted a decrease in help-seeking intentions through increases in perceived barriers. Self-efficacy did not mediate the relationship between susceptibility and intentions. Finally, with regard to perceived severity, an increase in severity predicted an increase in help-seeking intentions through increases in perceived benefits. While an increase in severity predicted a

decrease in help-seeking intentions through increases in perceived barriers and decreases in self-efficacy.

In sum, results from Model 3 suggested that although GHM, MHL, perceived susceptibility, and perceived severity did not directly predict intentions to seek help, they exerted an influence through their effects on the other HBM components, namely perceived benefits, perceived barriers, and self-efficacy. Fit indices suggested that while Model 3 is an adequate fit to the data, when compared to the model fit indices of Model 1, Model 3 did not fit the data as well. As was the case in the comparison of Model 1 to Model 2, Model 3 is a significantly more complex model requiring a larger number of parameters to be estimated and taxing the fit indices that contain a penalty for complexity.

Hypothesis 4. *Latent means will differ significantly between groups of low and high psychological distress, between those who have and those who have not sought help in the past, and between men and women.* Hypothesis 4 was partially supported, with the results from the latent means analysis indicating significant differences on latent means between individuals with and without previous help-seeking experiences and between males and females, but no significant mean differences between individuals experiencing low distress and those experiencing elevated distress.

With regards to previous help-seeking, seven of the eight latent factors had significantly different means between the two groups, with no significant differences found for perceived severity. Specifically, individuals with previous help-seeking experiences, on average reported greater general health motivation, greater perceived benefits, fewer perceived barriers, greater perceived susceptibility, greater self-efficacy, greater intentions to seek help, and higher mental health literacy. The significant differences between individuals with and without prior counseling

experiences was consistent with previous studies. The finding that individuals with previous experiences with mental health help-seeking are more likely to seek help in the future is consistent with the majority of previous research (e.g. Ægisdóttir & Gerstein, 2009; Hammer, Spiker, & Perrin, 2019; Kahn & Williams, 2003). The relationship of past experiences with the modelled predictors of intent was also consistent with previous research. For example, the current study found that individuals with previous counseling experience perceived more benefits to seeking help, fewer barriers to seeking help, greater susceptibility, and greater self-efficacy compared to others with no prior experience. These finding is consistent with studies that have reported more positive attitudes towards mental health help-seeking in individuals with prior help-seeking experience (e.g., Ægisdóttir & Gerstein, 2009; Dadfar & Friedlander, 1982; Halgin, Weaver, Edell, & Spencer, 1987; Van Voorhees et al., 2005) and studies suggesting relationships between poor health beliefs, prior help seeking, stigma towards mental illness and mental health care, and future help-seeking behaviors (e.g., Corrigan , Druss, & Perlick, 2014; Pattyn, Verhaeghe, Sercu, & bracke, 2014; Rusch, Angermeyer, & Corrigan, 2005). Individuals with previous experience were also found to have greater MHL, consistent with Gorczynski et al. (2016) who also reported a relationship between a greater understanding of treatment and expectations for treatment and previous help-seeking experience.

With regards to gender, six of the eight latent factors evidenced significant mean differences between males and females. Compared with females, males on average reported lower general health motivation, fewer perceived benefits, more perceived barriers, lower self-efficacy, lower intentions to seek help, and lower mental health literacy. The finding of significant differences on latent means between males and females is consistent with the bulk of previous studies that have demonstrated that males are significantly less likely to seek help (e.g.,

Ægisdóttir & Gerstein, 2009; Langley et al., 2017; Mackenzie, Gekoski, & Knox, 2006; Mojtabai et al., 2002). Women in the current sample perceived significantly more benefits to seeking mental health care compared to men, which is consistent with Nam et al.'s (2010) findings that women tend to have more positive attitudes towards help-seeking. Consistent with the review by Yousaf, Grunfeld, and Hunter (2013), men in the current sample reported significant difference from women on factors related to their perceived ability to engaged in help-seeking for mental health care, including perceiving more barriers and significantly lower self-efficacy. The men in the current sample also reported significantly lower MHL, producing the largest effect across all of the significant differences in latent means (d = .666), consistent with previous research examining MHL in male and female college students (Gorczynski et al., 2016).

Psychological distress was neither related to intentions to seek help, nor to the factors modeled as predictors of intentions. Previous work has suggested that inclusion in the HBM of a construct that taps into the affective components of behavior may help to explain relationships among the HBM constructs and enhance the predictive utility of the model as a whole (Champion & Skinner, 2008). In the context of the current study, this was not supported, as psychological distress did not appear to have an impact on the modeled relationships between HBM constructs or their relationship with intentions. the lack of a relationship between psychological distress and help-seeking intentions is consistent with the interpretation that an individual's perception of their need for professional help is not a direct response to their distress and impairment, but rather an indirect response through sociodemographic and attitudinal factors (see Mojtabai et al., 2002).

Implications for Theory, Research, Practice, and Future Directions

The results of the current study have implications for theory and research, as well as practice. Regarding theory, the HBM proposes a second-order factor structure for susceptibility and severity, whereby these two components are hypothesized to both be indicators of an overall level of perceived threat. However, the relationship between these two constructs has not always been clear in previous research (Champion & Skinner, 2008) and was not supported in the current study. Specifically, the current study attempted to fit the data to a second-order factor model with susceptibility and severity items modeled as indicators of their respective factors and the two factors modeled as indicators of a general level of threat factor. This model was not identified, resulting in the information matrix being uninvertible. As a follow-up, an exploratory bifactor model was then tested, which produced excellent global fit indices. However, examination of factor loadings on the overall threat factor, susceptibility factor, and severity factor revealed poor loadings for the severity items on the overall threat factor, poor factor loadings for the susceptibility items on their respective factor, and mixed loadings of the severity items on their respective factor. To this author's knowledge, no previous studies have reported CFAs examining the factor structure of a threat construct so comparison with previous findings is not possible. At least in the current sample, the hypothesized threat construct composed of susceptibility and severity items was not supported. Future research is needed to further clarify the relationship between perceived susceptibility and severity, and how they relate to the hypothesized perceived threat factor.

Contrary to hypotheses, the current study found no support for a direct relationship with intentions to seek mental health care from GHM, perceived susceptibility, perceived severity, or MHL. Model 3, while supporting the utility of mental health literacy, general health motivation,

perceived susceptibility, and perceived severity as indirect predictors of intentions, was found to be a poorer fitting model compared with Model 1. This author contends that although Model 3 was not found to be the best fitting model in the current analysis, it would be reckless and careless to simply toss out this model. It is possible that this model still provides valuable insights into the nature of the relationships between the variables of interest to the present study. Bagozzi & Yi (1988) warn against the practice of evaluating a model based solely on purely statistical benchmarks, "We cannot evaluate and interpret results as if they were divorced from the theory driving one's study or from other conceptual and philosophical issues that bear upon findings" (p.92). They argue that it is particularly problematic to fully reject a model based on one-off studies, and instead models should be evaluated within the context of the body of knowledge it purports to build upon. In the case of the present study, and specifically Model 3, no previous research has yet examined such a model, but the feasibility of such a model is supported by the existing literature and thus should be subjected to further examination in future studies.

The HBM has been criticized for a number of reasons, one of which concerns what Ogden (2003) referred to as the disconfirmability of the HBM. This refers to the persistence of the model and the championing of the model in the literature, with researchers frequently reporting that their data supports the model, when in actuality, these studies report nonsignificant relationships between one or more of the constructs and the target behavior. Ogden also pointed out that the range of the explained variance in target behavior across studies varies wildly (i.e., 1%-65%). In the current study, 77% of the variance in intentions to seek help was explained by the model, mostly due to perceived benefits, perceived barriers, and self-efficacy. Thus, the

conclusions drawn must be specific in saying that the results support the utility of benefits, barriers, and self-efficacy in predicting intentions, rather than the HBM as a whole.

The data presented from the current study and from previous studies does not indicate that the HBM is necessarily overly complex, or inherently wrong. Any number of confounding factors could explain the inconsistent findings from HBM studies. One of the most salient concerns is the measurement of the HBM constructs. While the current study included an instrument designed for the specific purpose of measuring mental health beliefs (HBMI; Saleeby, 2000), very little previous work has used the HBMI and no previous work has examined the psychometric properties of the HBMI in depth. It may be that it is easier to measure peoples' perceptions of the benefits and the barriers to seeking care and more difficult to measure concepts such as one's perceived susceptibility to a mental illness, the severity of a mental illness, and their general health motivation. This may partially explain why previous research has found more consistent findings predicting behavior from perceived benefits and barriers. Other factors could potentially further complicate measurement, such as whether or not the respondent is currently experiencing a mental illness and whether or not they are currently already receiving care for their illness. Such individuals will likely find questions regarding their future mental health care seeking behaviors confusing given their current status.

Future research would benefit from utilizing longitudinal or projective designs. Longitudinal studies are needed to examine help-seeking over time and to be better able to infer causality in the relationships between the modeled variables Currently, much of the research utilizing the HBM, this study included, has utilized a cross-sectional design and as such can only make hypotheses regarding the direction of relationships between components within a model. Mental health beliefs measured at an earlier time point and actual help-seeking behavior

measured at a later time point would provide more robust evidence for the relationship between variables. Relatedly, integrating HBM components shown to be predictive of initial contact with the mental health care system with the literature on treatment dropout and related processes that contribute to subsequent and sustained use of mental health care services (Henshaw & Freedman-Doan, 2009). That is, a more complete model of mental health care seeking behavior would be able to explain not only an individual initial entry into treatment but also their sustained utilization of treatment. Additionally, future research would benefit from examining the saliency of different barriers across various mental illnesses and ethnicities, and rural versus urban dwelling participants. For example, attitudinal barriers such as low perceived benefits or felt stigma may be more important for individuals who don't first have to worry about where their closest mental health care provider is because they live in an urban setting, or they are not already having to cope with cultural pressures against the use of mental health care services, such as individuals from Asian cultures. Similarly, the relationships between health beliefs, attitudes towards help-seeking, and ultimate behavior may be significantly different for individuals with a primary thought disorder compared to individuals with a mood disorder.

While the current study found mixed results for the importance of MHL in the prediction of intentions to seek help, future research should continue to examine the role of MHL in predicting positive help-seeking attitudes and especially help-seeking behavior. Given the plethora of previous research demonstrating the connection between MHL and help-seeking attitudes and intentions, along with the findings from the current study demonstrating the relationship between MHL and health beliefs, further research integrating MHL into a larger theoretical context would provide a framework for better understanding the mechanisms of action between MHL and other factors predicting help-seeking. The importance of educating the

public about the benefits of seeing a mental health professional when experiencing a mental health condition is evident in the extant literature and further supported by the current study's findings regarding the relationship between MHL and positive mental health beliefs. Henshaw and Freedman-Doan proposed the use of marketing theories to develop effective mental health care promotion campaigns. Campaigns aimed at influencing attitudes, increasing mental health literacy, and improving motivation are greatly needed for encouraging individuals with mental health difficulties to become accepting of their need for help and to reduce the barriers that stand to prevent individuals from reaching the help they need.

The current study applied theory-driven, evidence-based models of health behaviors to expand the literature concerning the ability of health beliefs to influence behavioral intentions, how health beliefs relate to self-efficacy beliefs, and how information, or mental health literacy, impacts individuals' health beliefs and their intentions to seek help. Ultimately, findings from this and related studies can be utilized to then develop theory-driven intervention programs at more ecological levels. Future research projects would benefit from continuing to consolidate existing models of health behaviors and testing theory-informed integrated models that incorporate the most valuable components from existing health behavior models. Such integrated models will provide stronger theoretical basis for the continued development and assessment of interventions aimed at increasing treatment utilization and adherence (e.g., Holmes, Hughes, Morrison, 2014). An example of such work has been demonstrated by researchers interested in understanding and predicting condom use. Reid and Aiken (2011) utilized components from four separate models of behavior and constructed an integrated model that was then used to predict condom usage eight weeks later. These authors concluded that the integrated model provided a

more complete understanding of the behavior, with key components from each of the theories contributing significantly to the prediction of the targeted outcome behavior.

Limitations

The results and conclusions of the current study should be interpreted with the awareness of a number of limitations related to internal and external validity. First, the current study utilized a cross sectional design thus limiting the ability to make inferences about causality. Second, the current study relied upon self-report methods of data collection, which are vulnerable to biases such as social desirability. Third, generalizability of findings may be limited in some respects due to sample restrictions, including age (63% 18-25), gender (76% female), ethnicity (79% Caucasian), previous mental health care (65% yes), and sexual orientation (75% heterosexual). Fourth, related to the current study's comparability with other studies utilizing the HBM, the HBM construct *cues to action* was not included in the models tested in the current study. While this is not uncommon in studies utilizing the HBM, it is important to acknowledge that the omission of this variable limits the conclusions that can be drawn about the overall predictive utility of the HBM as a whole. Fifth, while intentions to perform a behavior is a strong predictor of actual behavior (Ajzen, Joyce, Sheikh, & Cote, 2011), and it is accepted practice to use intentions as a proxy to actual behavior, intentions are not a perfect predictor of actual behavior. Findings from the current study should be interpreted with that in mind.

Lastly, the discrepancy between the zero-order correlations and the path coefficients between factors is likely related to issues of multicollinearity between the factors. The matrix of standardized residuals produced by the structural equation modeling analysis was examined for issues of overestimation and underestimation of the relationships between indicators of the latent factors. As reported in the results section, modification indices along with the standardized

residuals were used to trim and respecify the model after it initially produced an unacceptable fit. Despite respecification and improving model fit indices, there continued to be a significant number of standardized residuals that were larger than the recommended cut-point for interpreting residuals. This suggest there is likely a model-wide issue related to mis-specifying the zero-order relationships between latent factor indicators and by extension the latent factors themselves. With this in mind, the results suggest that a significant proportion of variance in intentions to seek help explained by general health motivation, susceptibility, severity, and MHL is likely accounted for by another factor in the model (i.e., perceived benefits, barriers, or self-efficacy).

Conclusion

In the current study, the health belief model was utilized to model the relationship among variables hypothesized to influence intentions to seek mental health care: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, general health motivation, self-efficacy, and mental health literacy. Structural equation modeling was used to test these relationships and to compare the fit of a model with only HBM factors (Model 1) and a model integrating mental health literacy (Model 2). A third model (Model 3) was specified from Model 2 modification indices and a review of previous research and theory. Structural equation modeling was also used to examine measurement and structural invariance in order to assess the moderating effects of gender, previous help-seeking experiences, and level of distress. Results of the analyses found adequate model fit across all three models, with Model 1 producing the best global and local fit indices. Model 3 specified a parallel mediation model whereby general health motivation, mental health literacy, perceived susceptibility, and perceived severity were modeled as predictors of perceived benefits, perceived barriers, and self-efficacy, which predicted

intentions to seek help. Results from the analysis of Model 3 found support for significant indirect effects of MHL on intentions through the three mediators. All of the latent variable models were found to be invariant across males and females, individuals with and without previous help-seeking, and individuals with low and high psychological distress. Latent means analysis found significant differences in latent means across males and females and across individuals with and without previous help-seeking experiences.

Overall, results of the current study support the utility of perceived benefits, perceived barriers, and self-efficacy as direct predictors of help-seeking intentions (Model 1). However, the other components of the HBM, perceived susceptibility, perceived severity, and GHM were not found to be significant predictors in this model. Thus, only partial support for the utility of the HBM in predicting intentions to seek mental health care was found. Additionally, contrary to hypotheses, MHL did not contribute significantly to the prediction of intentions to seek mental health care. Results of the current study suggest that interventions aimed at increasing intentions to seek mental health care would do well to focus on increasing individuals' awareness of the benefits to seeking help, provide support for breaking down potential barriers that individuals may perceive to prevent them from seeking help, and provide support and empowerment around individuals' ability to seek mental health care when needed.

References

Aday, L. A., & Andersen, R. (1974). A framework for the study of access to medical care. *Health Services Research, 9*, 208-220.

Ægisdóttir, S., & Gerstein, L. H. (2009). Beliefs About Psychological Services (BAPS): Development and psychometric properties. *Counselling Psychology Quarterly, 22*, 197-219. doi:10.1080/09515070903157347

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211. doi:10.1016/0749-5978(91)90020-T

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.

Ajzen, I., Joyce, N., Sheikh, S., & Cote, N. G. (2011). Knowledge and the prediction of behavior: The role of information accuracy in the theory of planned behavior. *Basic and Applied Social Psychology, 33,* 101-117. doi: 10.1080/01973533.2011.568834

Anagnostopoulos, F., Dimitrakaki, C., Fitzsimmons, D., Potamianos, G., Niakas, D., & Tountas, Y. (2012). Health beliefs and illness perceptions as related to mammography uptake in randomly selected women in Greece. *Journal of Clinical Psychology in Medical Settings, 19*, 147-164. doi:10.1007/s10880-011-9272-1

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of health and social behavior, 36,* 1-10. doi:10.2307/2137284

Andrade, L. H., Alonso, J., Mneimneh, Z., Wells, J. E., Al-Hamzawi, A., Borges, G., . . . Kessler, R. C. (2014). Barriers to mental health treatment: Results from the WHO World Mental Health surveys. *Psychological Medicine, 44*, 1303-1317. doi:10.1017/S0033291713001943

Aneshensel, C. S., Phelan, J. C., & Bierman, A. (Eds.). (2013). *Handbook of the sociology of mental health* (2nd ed.). New York, NY: Springer.

Angermeyer, M. C., & Dietrich, S. (2006). Public beliefs about and attitudes towards people with mental illness: A review of population studies. *Acta Psychiatrica Scandinavia, 113*, 163-179. doi:10.1111/j.1600-0447.2005.00699.x

Angermeyer, M. C., Matschinger, H., & Schomerus, G. (2013). Attitudes towards psychiatric treatment and people with mental illness: changes over two decades. *British Journal of Psychiatry, 203*, 146-151. doi:10.1192/bjp.bp.112.122978

Atik, G., & Yalcin, I. (2011). Help-seeking attitudes of university students: The role of personality traits and demographic factors. *South African Journal of Psychology, 41*, 328-338. doi:10.1177/008124631104100307

Barney, L. J., Griffiths, K. M., Jorm, A. F., & Christensen, H. (2006). Stigma about depression and its impact on help-seeking intentions. *Australian and New Zealand Journal of Psychiatry, 40*, 51-54. doi:10.1080/j.1440-1614.2006.01741.x

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Quantitative Methods In Psychology, 107*, 238-246. doi:10.1037/0033-2909.107.2.238

Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate Software.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606. doi:10.1037/0033-2909.88.3.588

Bistricky, S., L., Harper, K. L., Roberts, C. M., Cook, D. M., Schield, S. L., Bui, J., & Short, M. B. (2017). Understanding and promoting stress management practices among college students through an integrated health behavior model. *American Journal of Health Education, 49*, 12-27. doi:10.1080/19325037.2017.1377651

Bland, R. C., Newman, S. C., & Orn, H. (1997). Help-seeking for psychiatric disorders. *Canadian Journal of Psychiatry, 42*, 935-942. doi:10.1177/070674379704200904

Bonabi, H., Muller, M., Ajdacic-Gross, V., Eisele, J., Rodgers, S., Seifritz, E., . . . Rusch, N. (2016). Mental health literacy, attitudes to help seeking, and perceived need as predictors of mental health service use: A longitudinal study. *The Journal of Nervous and Mental Disease, 204*, 321-324. doi:10.1097/NMD.0000000000000488

Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). New York, NY: Guilford.

Campbell, L. F., Norcross, J. C., Vasquez, M. J., & Kaslow, N. J. (2013). Recognition of psychotherapy effectiveness: the APA resolution. *Psychotherapy, 50*, 98-101. doi:10.1037/a0031817

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication, 25*, 661-669. doi:10.1080/10410236.2010.521906

Carr, A. (2009). The effectiveness of family therapy and systemic interventions for adult-focused problems. *Journal of Family Therapy, 31*, 46-74. doi:10.1111/j.1467-6427.2008.00452.x

Castonguay, J., Filer, C. R., & Pitts, M. J. (2016). Seeking help for depression: Applying the health belief model to illness narratives. *Southern Communication Journal, 81*, 289-303. doi:10.1080/1041794x.2016.1165729

Çebi, E. (2009). *University students' attitudes toward seeking psychological help: Effects of perceived social support, psychological distress, prior help-seeking experience, and gender* (Master's thesis). Retrieved from https://etd.lib.metu.edu.tr/upload/12610828/index.pdf

Champion, V. L., & Skinner, C. S. (2008). The Health Belief Model Health Behaviora and Health Education: Theory, Research, and Practice (4th ed.). San Francisco, CA: Jossey-Bass.

Cheang, S. I., & Davis, J. M. (2014). Influences of face, stigma, and psychological symptoms on help-seeking attitudes in Macao. *Psych Journal, 3*(3), 222-230. doi:10.1002/pchj.61

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*, 233-255. doi:10.1207/S15328007SEM0902_5

Choirat, C., Honaker, J., Imai, K., King, G., & Lau, O. (2018). Zelig: Everyone's statistical software. Version 5.1.6. Retrieved from http://zeligproject.org/

Choudhry, F. R., Mani, V., Ming, L. C., & Khan, T. M. (2016). Beliefs and perception about mental health issues: A meta-synthesis. *Neuropsychiatric Diseases and Treatment, 12*, 2807-2818. doi:10.2147/NDT.S111543

Clement, S., Schauman, O., Graham, T., Maggioni, F., Evans-Lacko, S., Bezborodovs, N., . . . Thornicroft, G. (2014). What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological Medicine, 45*, 11-27. doi:10.1017/S0033291714000129

Coles, M. E., & Coleman, S. L. (2010). Barriers to treatment seeking for anxiety disorders: Initial data on the role of mental health literacy. *Depression and Anxiety, 27*, 63-71. doi:10.1002/da.20620

Conn, V. S., Enriquez, M., Ruppar, T. M., & Chan, K. C. (2016). Meta-analyses of theory use in medication adherence intervention research. *American Journal of Health Behavior, 40*, 155-171. doi:10.5993/ajhb.40.2.1

Corrigan, P. W. (2004). How stigma interferes with mental health care. *American Psychologist, 59*, 614-625. doi:10.1037/0003-066X.59.7.614

Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The impact of mental illness stigma on seeking and aprticipating in mental health care. *Psychological Science in the Public Interest, 15*, 37-70. doi:10.1177/1529100614531398

Cramer, K. M. (1999). Psychological antecedents to help-seeking behavior: A reanalysis using path modeling structures. *Journal of Counseling Psychology, 46*, 381-387. doi:10.1037/0022-0167.46.3.381

Cuijpers, P., de Graaf, R., & van Dorsselaer, S. (2004). Minor depression: Risk profiles, functional disability, health care use and risk of developing major depression. *Journal of Affective Disorders, 79*, 71-79. doi:10.1016/s0165-0327(02)00348-8

Cuijpers, P., van Straten, A., Andersson, G., & van Oppen, P. (2008). Psychotherapy for depression in adults: A meta-analysis of comparative outcome studies. *Journal of Consulting and Clinical Psychology, 76*, 909-922. doi:10.1037/a0013075

Cusack, J., Deane, F. P., Wilson, C. J., & Ciarrochi, J. (2006). Emotional expression, perceptions of therapy, and help-seeking intentions in men attending therapy services. *Psychology of Men & Masculinity, 7*, 69-82. doi:10.1037/1524-9220.7.2.69

Dadfar, S., & Friedlander, M. L. (1982). Differential attitudes of international students toward seeking professional psychological help. *Journal of Counseling Psychology, 29*, 335-338.

Dempster, A. P., Laird, N. M., & Rubin, D. B. (1977). Maximum likelihood from incomplete data via the EM algorithm. *Journal of the Royal Statistical Society: Series B (Methodological), 39*, 1-22. doi:10.1111/j.2517-6161.1977.tb01600.x

Demyttenaere, K., Bruffaerts, R., Posada-Villa, J., Gasquet, I., Kovess, V., Lepine, J. P., . . . Chatterji, S. (2004). Prevalence, severity, and unmet need for treatment of mental

disorders in the world health organization world mental health surveys. *JAMA, 291*, 2581-2590. doi:10.1001/jama.291.21.2581

Fabrega, H. J. (1973). Toward a model of illness behavior. *Medical Care, 11*, 470-484. doi:10.1097/00005650-197311000-00002

Fabrigar, L. R., & Wegener, D. T. (2010). Attitude structure. In R. F. Baumeister & E. J. Finkel (Eds.), *Advanced social psychology: The state of the science* (pp. 177-216). New York, NY: Oxford University Press.

Fischer, E. H., & Farina, A. (1970). Attitudes toward seeking professional psychological help: A shortened form and considerations for research. *Journal of College Student Development, 36*, 368-373. doi:10.1037/t05375-000

Fischer, E. H., & Turner, J. L. (1970). Orientations to seeking professional help: Development and research utility of an attitude scale. *Journal of Consulting and Clinical Psychology, 35*, 79-90. doi:10.1037/h0029636

Fishbein, M. (1967). A consideration of beliefs and their role in attitude measurement. In M. Fishbein (Ed.), *Readings in attitude theory and measurement* (pp. 257-266). New York: Wiley.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.

Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin, 111*, 455-474. doi:10.1037/0033-2909.111.3.455

Fletcher, T. D. (2012). QuantPsyc: Quantitative Psychology Tools. R package version 1.5. Retrieved from https://CRAN.R-project.org/package=QuantPsyc.

Gabriel, A., & Violato, C. (2010a). Depression literacy among patients and the public: A literature review. *Primary Psychiatry, 17*, 55-64.

Gabriel, A., & Violato, C. (2010b). The development and psychometric assessment of an instrument to measure attitudes towards depression and its treatments in patients suffering from non-psychotic depression. *Journal of Affective Disorders, 124*, 241-249. doi:10.1016/j.jad.2009.11.009

Gammage, K. L., & Klentrou, P. (2011). Predicting osteoporosis prevention behaviors: Health beliefs and knowledge. *American Journal of Health Behavior, 35*, 371-382. doi:10.5993/ajhb.35.3.10

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2008). Health behavior and Health Education: Theory, Research, and Practice (4th ed.). San Francisco, CA: Jossey-Bass.

Gorczynski, P., Sims-schouten, W., Hill, D., & Wilson, J. C. (2017). Examining mental health literacy, help seeking behaviours, and mental health outcomes in UK university students. *The Journal of Mental Health Training, Education and Practice, 12*, 111-120. doi:10.1108/jmhtep-05-2016-0027

Gulliver, A., Griffiths, K. M., & Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry, 10*, 113-121. doi:10.1186/1471-244X-10-113

Gum, A. M., Iser, L., & Petkus, A. (2010). Behavioral health service utilization and preferences of older adults receiving home-based aging services. *American Journal of Geriatric Psychiatry, 18*, 491-501. doi:10.1097/JGP.0b013e3181c29495

Hagtvet, K. A., & Nasser, F. M. (2004). How well do item parcels represent conceptually defined latent constructs? A two-facet approach. *Structural Equation Modeling: A Multidisciplinary Journal, 11*, 168-193. doi:10.1207/s15328007sem1102_2

Halgin, R. P., Weaver, D. D., Edell, W. S., & Spencer, P. G. (1987). Relation of depression and help-seeking hsitory to attitudes toward seeking professional psychological help. *Journal of Counseling Psychology, 34*, 177-185.

Hammer, J. H., Spiker, D. A., & Perrin, P. B. (2019). Physician referral to a psychologist: Testing alternative behavioral healthcare seeking models. *Journal of Clinical Psychology, 75*, 726-741. doi:10.1002/jclp.22729

Harrison, J. A., Mullem, P. D., & Green, L. W. (1992). A meta-analysis of studies of the health belief model with adults. *Health Education Research: Theory & Practice, 7*, 107-116. doi:10.1093/her/7.1.107

Haughton, D. M. A. (1988). On the choice of a model to fit data from an exponential family. *The Annals of Statistics, 16*, 342-355. doi:10.1214/aos/1176350709

Henderson, C., Evans-Lacko, S., & Thornicroft, G. (2013). Mental illness stigma, help seeking, and public health programs. *American Journal of Public Health, 103*, 777-780. doi:10.2105/AJPH.2012.301056

Henshaw, E. J., & Freedman-Doan, C. R. (2009). Conceptualizing mental health care utilization using the Health Belief Model. *Clinical Psychology: Science and Practice, 16*, 420-439. doi: 10.1111/j.1468-2850.2009.01181.x

Hess, T. R., & Tracey, T. J. G. (2013). Psychological help-seeking intention among college students across three problem areas. *Journal of Counseling & Development, 91*, 321-330. doi:10.1002/j.1556-6676.2013.00100.x

Hochbaum, G. M. (1958). *Public participation in medical screening programs: A socio-psychological study*. Washington, D.C.: U.S. Dept. of Health, Education, and Welfare.

Holmes, E. A., Hughes, D. A., & Morrison, V. L. (2014). Predicting adherence to medications using health psychology theories: a systematic review of 20 years of empirical research. *Value in Health, 17*, 863-876. doi:10.1016/j.jval.2014.08.2671

Honaker, J., King, G., & Blackwell, M. (2011). Amelia II: A program for missing data. *Journal of Statistical Software, 45*(7), 1-47. doi:http://www.jstatsoft.org/v45/i07/

Hong, S., Malik, M. L., & Lee, M.-K. (2003). Testing configural, metric, scalar, and latent mean invariance across genders in sociotropy and autonomy using a non-western sample. *Educational and Psychological Measurement, 63*, 636-654. doi:10.1177/0013164403251332

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*, 1-55. doi:10.1080/10705519909540118

Huber, P. J. (1967). The behavior of maximum likelihood estimates under nonstandard conditions. *Proceedings of the Fifth Berkley Symposium on Mathematical Statistics and Probability: Vol. 1. Statistics* (pp. 221-233). Retrieved from https://projecteuclid.org/euclid.bsmsp/1200512988

Hunt, J., & Eisenberg, D. (2010). Mental health problems and help-seeking behavior among college students. *Journal of Adolescent Health, 46*, 3-10. doi:10.1016/j.jadohealth.2009.08.008

Imai, K., King, G., & Lau, O. (2008). Toward a common framework for statistical analysis and development. *Journal of Computational Graphics and Statistics, 17*, 892-913. doi:j.mp/msE15c

Ingham, J. G., & Miller, P. M. (1986). Self-referral to primary care: Symptoms and social factors. *Journal of Psychosomatic Research, 30*, 49-56. doi: 10.1016/0022-3999(86)90065-6

Insel, T. R. (2008). Assessing the economic costs of serious mental illness. *American Journal of Psychiatry, 165*, 663-665. doi: 10.1176/appi.ajp.2008.08030366

Jorm, A. F. (2012). Mental health literacy: empowering the community to take action for better mental health. *American Psychologist, 67*, 231-243. doi:10.1037/a0025957

Jung, H., von Sternberg, K., & Davis, K. (2017). The impact of mental health literacy, stigma, and social support on attitudes toward mental health help-seeking. *International Journal of Mental Health Promotion, 19*, 252-267. doi:10.1080/14623730.2017.1345687

Kahn, J. H., & Williams, M. N. (2003). The impact of prior counseling on predictors of college counseling center use. *Journal of College Counseling, 6*, 144-154. doi: 10.1002/j.2161-1882.2003.tb00235.x

Kakhnovets, R. (2011). Relationships among personality, expectations about counseling, and help-seeking attitudes. *Journal of Counseling & Development, 89*, 11-19. doi:10.1002/j.1556-6678.2011.tb00056.x

Kazdin, A. E. (2017). Addressing the treatment gap: A key challenge for extending evidence-based psychosocial interventions. *Behavior Research and Therapy, 88*, 7-18. doi:10.1016/j.brat.2016.06.004

Kelly, A. E., & Achter, J. A. (1995). Self-concealment and attitudes toward counseling in university students. *Journal of Counseling Psychology, 42*, 40-46. doi: 10.1037//0022-0167.42.1.40

Kelly, C. M., Jorm, A. F., & Wright, A. (2007). Improving mental health literacy as a strategy to facilitate early intervention for mental disorders. *Medical Journal of Australia, 187*(7), 26-30. Retrieved from https://www.mja.com.au/

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., . . . Wang, P. S. (2011). The global burden of mental disorders: An update from the WHO World Mental Health (WMH) Surveys. *Epidemiology and Psychiatric Sciences, 18*, 23-33. doi:10.1017/s1121189x00001421

Kessler, R. C., Angermeyer, M. C., Anthony, J. C., de Graaf, R., Demyttenaere, K., Gasquet, I., . . . Üstün, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey initiative. *World Psychiatry, 6*, 168-176.

Kessler, R. C., Heeringa, S., Lakoma, M. D., Petukhova, M., Rupp, A. E., Schoenbaum, M., . . . Zaslavsky, A. M. (2008). Individual and societal effects of mental disorders on earnings in the United States: Results from the national comorbidity survey replication. *American Journal of Psychiatry, 165*, 703-711. doi: 10.1176/appi.ajp.2008.08010126

Kessler, R. C., & Merikangas, K. R. (2004). The national comobidity survey replication (NCS-R): Background and aims. *International Journal of Methods in Psychiatric Research, 13*, 60-68. doi: 10.1002/mpr.166

Kim, B. S. K., & Omizo, M. M. (2003). Asian cultural values, attitudes toward seeking professional psychological help, and willingness to see a counselor. *The Counseling Psychologist, 31*, 343-361. doi:10.1177/0011000003252268

Kim, J. E., & Zane, N. (2016). Help-seeking intentions among Asian American and White American students in psychological distress: Application of the health belief model. *Cultural Diversity and Ethnic Minority Psychology, 22*, 311-321. doi:10.1037/cdp0000056

Kim, P. Y., & Kendall, D. L. (2015). Etiology beliefs moderate the influence of emotional self-control on willingness to see a counselor through help-seeking attitudes among Asian American students. *Journal of Counseling Psychology, 62*, 148-158. doi: 10.1037/cou0000015

Kim, P. Y., & Park, I. J. (2009). Testing a multiple mediation model of Asian American college students' willingness to see a counselor. *Cultural Diversity and Ethnic Minority Psychology, 15*, 295-302. doi:10.1037/a0014396

King, K. A., Vidourek, R. A., & Strader, J. L. (2008). University students' perceived self-efficacy in identifying suicidal warning signs and helping suicidal friends find campus intervention resources. *Suicide and Life-Threatening Behavior, 38*, 608-617. doi:10.1521/suli.2008.38.5.608

Kitchener, B. A., & Jorm, A. F. (2004). Mental health first aid training in a workplace setting: a randomized controlled trial [ISRCTN13249129]. *BMC Psychiatry, 4*, 23. doi:10.1186/1471-244X-4-23

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford.

Kohn, R., Saxena, S., Levav, I., & Saraceno, B. (2004). The treatment gap in mental health care. *Bulletin of the World Health Organization, 82*, 858-866.

Koydemir-Özden, S., & Erel, Ö. (2010). Psychological help-seeking: Role of socio-demographic variables, previous help-seeking experience and presence of a problem. *Procedia - Social and Behavioral Sciences, 5*, 688-693. doi:10.1016/j.sbspro.2010.07.166

Kuhn, J.-T., & Holling, H. (2009). Measurement invariance of divergent thinking across gender, age, and school forms. *European Journal of Psychological Assessment, 25*, 1-7. doi:10.1027/1015-5759.25.1.1

Kutcher, S., Wei, Y., & Coniglio, C. (2016). Mental health literacy: Past, present, and future. *Canadian Journal of Psychiatry, 61*, 154-158. doi:10.1177/0706743715616609

Langley, E. L., Wootton, B. M., & Grieve, R. (2017). The utility of the health belief model variables in predicting help-seeking intention for anxiety disorders. *Australian Psychologist, 53,* 291-301. doi:10.1111/ap.12334

Lin, L., Huang, P., & Weng, L. (2017). Selecting path models in SEM: A comparison of model selection criteria. *Structural Equation Modeling: A Multidisciplinary Journal, 24*, 855-869. doi:10.1080/10705511.2017.1363652

Linke, S. E., Robinson, C. J., & Pekmezi, D. (2013). Applying psychological theories to promote healthy lifestyles. *American Journal of Lifestyle Medicine, 8*, 4-14. doi:10.1177/1559827613487496

Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling: A Multidisciplinary Journal, 9*, 151-173. doi:10.1207/s15328007sem0902_1

Mackenzie, C. S., Erickson, J., Deane, F. P., & Wright, M. (2014). Changes in attitudes toward seeking mental health services: A 40-year cross-temporal meta-analysis. *Clinical Psychology Review, 34*, 99-106. doi:10.1016/j.cpr.2013.12.001

Mackenzie, C. S., Gekoski, W. L., & Knox, V. J. (2006). Age, gender, and the underutilization of mental health services: The influence of help-seeking attitudes. *Aging & Mental Health, 10*, 574-582. doi:10.1080/13607860600641200

Mackenzie, C. S., Pagura, J., & Sareen, J. (2010). Correlates of perceived need for and use of mental health services by older adults in the collaborative psychiatric epidemiology surveys. *American Journal of Geriatric Psychiatry, 18*, 1103-1115. doi:10.1097/JGP.0b013e3181dd1c06

Mackinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*, 99-128. doi:10.1207/s15327906mbr3901_4

Mak, H. W., & Davis, J. M. (2014). The application of the theory of planned behavior to help-seeking intention in a Chinese society. *Social Psychiatry and Psychiatric Epidemiology, 49,* 1501-1515. doi:10.1007/s00127-013-0792-x

Mantler, T. (2012). A systematic review of smoking youths' perceptions of addiction and health risks associated with smoking: Utilizing the framework of the health belief model. *Addiction Research & Theory, 21*, 306-317. doi:10.3109/16066359.2012.727505

Matsunaga, M. (2008). Item parceling in structural equation modeling: A primer. *Communication Methods and Measures, 2*, 260-293. doi:10.1080/19312450802458935

McGuire, T. G., & Miranda, J. (2008). New evidence regarding racial and ethnic disparities in mental health: Policy implications. *Health Affairs, 27*, 393-403. doi:10.1377/hlthaff.27.2.393

Mechanic, D. (1962a). The concept of illness behavior. *Journal of Chronic Disease, 15*, 189-194. doi:10.1016/0021-9681(62)90068-1

Mechanic, D. (1962b). *Students under stress: A study of the social psychology of adaptation*. New York, NY: Free Press.

Mechanic, D. (1966). Response factors in illness: The study of illness behavior. *Social Psychiatry, 1*, 11-20. doi: 10.1007/bf00583824

Mechanic, D. (1976). Stress, illness, and illness behavior. *Journal of Human Stress, 2*(2), 2-6. doi:10.1080/0097840X.1976.9936061

Mechanic, D. (1982). The epidemiology of illness behavior and its relationship to physical and psychological distress. In D. Mechanic (Ed.), *Symptoms, illness behavior, and help-seeking* (pp. 1-24). New York, NY: Prodist.

Mechanic, D. (1992). Health and illness behavior and patient-practitioner relationships. *Social Science & Medicine, 34*, 1345-1350. doi: 10.1016/0277-9536(92)90143-e

Mendenhall, A. N., Jackson, S. C., & Hase, S. (2013). Mental health first aid USA in a rural community: perceived impact on knowledge, attitudes, and behavior. *Social Work in Mental Health, 11*, 563-577. doi:10.1080/15332985.2013.812542

Mo, P. K., & Mak, W. W. (2009). Help-seeking for mental health problems among Chinese: The application and extension of the theory of planned behavior. *Social Psychiatry and Psychiatric Epidemiology, 44*, 675-684. doi:10.1007/s00127-008-0484-0

Mojtabai, R., Olfson, M., & Mechanic, D. (2002). Perceived need and help-seeking in adults with mood, anxiety, or substance use disorders. *Archive of General Psychiatry, 59*, 77-84. doi: 10.1001/archpsyc.59.1.77

Mojtabai, R., Olfson, M., Sampson, N. A., Jin, R., Druss, B., Wang, P. S., . . . Kessler, R. C. (2011). Barriers to mental health treatment: Results from the National Comorbidity Survey Replication. *Psychological Medicine, 41*, 1751-1761. doi:10.1017/S0033291710002291

Möller-Leimkühler, A. M. (2002). Barriers to help-seeking by men: A review of sociocultural and clinical literature with particular reference to depression. *Journal of Affective Disorders, 71*, 1-9. doi: 10.1016/s0165-0327(01)00379-2

Montaño, D. E., & Kasprzyk, D. (2008). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 67-96). San Francisco, CA: Jossey-Bass.

Moore, C. D., Schofield, C., van Rooyen, D. R., & Andersson, L. M. (2015). Development and preliminary validation of a scale to measure self-efficacy in seeking mental health care (SE-SMHC). *Springerplus, 4*, 339. doi:10.1186/s40064-015-1109-1

Morawska, A., Fletcher, R., Pope, S., Heathwood, E., Anderson, E., & McAuliffe, C. (2013). Evaluation of mental health first aid training in a diverse community setting. *International Journal of Mental Health Nursing, 22*, 85-92. doi:10.1111/j.1447-0349.2012.00844.x

Nam, S. K., Chu, H. J., Lee, M. K., Lee, J. H., Kim, N., & M., L. S. (2010). A meta-analysis of gender differences in attitudes toward seeking professional help. *Journal of American College Health, 59*, 110-116. doi: 10.1080/07448481.2010.483714.

Nobiling, B. D., & Maykrantz, S. A. (2017). Exploring perceptions about and behaviors related to mental illness and mental health service utilization among college students using the health belief model (HBM). *American Journal of Health Education, 48*, 306-319. doi:10.1080/19325037.2017.1335628

Noone, J. H., & Stephens, C. (2008). Men, masculine identities, and health care utilisation. *Sociology of Health & Illness, 30*, 711-725. doi: 10.1111/j.1467-9566.2008.01095.x

O'Connor, P. J., Martin, B., Weeks, C. S., & Ong, L. (2014). Factors that influence young people's mental health help-seeking behaviour: a study based on the Health Belief Model. *Journal of Advanced Nursing, 70*, 2577-2587. doi:10.1111/jan.12423

O'Connor, M., Casey, L., & Clough, B. (2014). Measuring mental health literacy: A review of scaled-based measures. *Journal of Mental Health, 23*, 197-204. doi:0.3109/09638237.2014.910646

Ogden, J. (2003). Some problems with social cognition models: A pragmatic and conceptual analysis. *Health Psychology, 22,* 424-428. doi: 10.1037/0278-6133.22.4.424

Orji, R., Vassileva, J., & Mandryk, R. (2012). Towards an effective health interventions design: An extension of the health belief model. *Online Journal of Public Health Informatics*, *4*(3). doi:doi:10.5210/ojphi.v4i3.4321

Palazzo, M. C., Dell'Osso, B., Altamura, A. C., Stein, D. J., & Baldwin, D. S. (2014). Health literacy and the pharmacological treatment of anxiety disorders: A systematic review. *Human Psychopharmacology, 29*, 211-215. doi:10.1002/hup.2397

Park, D. Y. (2011). Utilizing the Health Belief Model to predicting female middle school students' behavioral intention of weight reduction by weight status. *Nutrion Research and Practice, 5*, 337-348. doi:10.4162/nrp.2011.5.4.337

Pattyn, E., Verhaeghe, M., Sercu, C., & Bracke, P. (2014). Public stigma and self-stigma: Differential association with attitudes toward formal and informal help seeking. *Psychiatric Services, 65*, 232-238. doi:10.1176/appi.ps.201200561

Petrie, K. J., Broadbent, E., & Kydd, R. (2009). Illness perceptions in mental health: Issues and potential applications. *Journal of Mental Health, 17*, 559-564. doi:10.1080/09638230802523047

Picco, L., Abdin, E., Chong, S. A., Pang, S., Vaingankar, J. A., Sagayadevan, V., . . . Subramaniam, M. (2016). Beliefs about help seeking for mental disorders: Findings from a mental health literacy study in Singapore. *Psychiatric Services, 67*, 1246-1253. doi:10.1176/appi.ps.201500442

Plotnikoff, R. C., Costigan, S. A., Karunamuni, N., & Lubans, D. R. (2013). Social cognitive theories used to explain physical activity behavior in adolescents: A systematic review and meta-analysis. *Preventative Medicine, 56*, 245-253. doi:10.1016/j.ypmed.2013.01.013

Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review, 41*, 71-90. doi:10.1016/j.dr.2016.06.004

Radisic, G., Chapman, J., Flight, I., & Wilson, C. (2017). Factors associated with parents' attitudes to the HPV vaccination of their adolescent sons : A systematic review. *Preventative Medicine, 95*, 26-37. doi:10.1016/j.ypmed.2016.11.019

Raykov, T. (1997). Estimation of composite reliability for congeneric measures. *Applied Psychological Measurement, 21*, 173-184. doi:10.1177/01466216970212006

Reavley, N. J., & Jorm, A. F. (2011a). Recognition of mental disorders and beliefs about treatment and outcome: Findings from an Australian national survey of mental health literacy and stigma. *Australian and New Zealand Journal of Psychiatry, 45*, 947-956. doi:10.3109/00048674.2011.621060

Reavley, N. J., & Jorm, A. F. (2011b). Young people's recognition of mental disorders and beliefs about treatment and outcome: Findings from an Australian national survey. *Australian and New Zealand Journal of Psychiatry, 45*, 890-898. doi:10.3109/00048674.2011.614215

Recto, P., & Champion, J. D. (2017). Assessment of mental health literacy among perinatal hispanic adolescents. *Issues in Mental Health Nursing, 38*, 1030-1038. doi:10.1080/01612840.2017.1349224

Reid, A. E., & Aiken, L. S. (2011). Integration of five health behaviour models: common strengths and unique contributions to understanding condom use. *Psychology and Health, 26*, 1499-1520. doi:10.1080/08870446.2011.572259

Rickwood, D. J., & Braithwaite, V. A. (1994). Social-psychological factors affecting help-seeking for emotional problems. *Social Science & Medicine, 39*, 563-572. doi: 10.1016/0277-9536(94)90099-x

Rickwood, D. J., & Thomas, K. A. (2012). Conceptual measurement framework for help-seeking for mental health problems. *Psychology Research and Behavior Management, 5,* 173-183. doi: 10.2147/PRBM.S38707

Rogers, W. M., & Schmitt, N. (2004). Parameter recovery and model fit using multidimensional composites: A comparison of four empirical parceling algorithms. *Multivariate Behavioral Research, 39*, 379-412. doi:10.1207/s15327906mbr3903_1

Rosenstock, I. M. (1974). Historical origins of the Health Belief Model. *Health Education Monographs, 2*, 328-335. doi:10.1177/109019817400200403

Rosenstock, I. M. (2008). The health belief model: Explaining health behavior through expectancies. In K. Glanz, S. M. Lewis, & B. Remer (Eds.), *Health behavior and health*

education: Theory, research, and practice (pp. 39-62). San Francisco, CA: Jossey-Bass Publishers.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education & Behavior, 15*, 175-183. doi:10.1177/109019818801500203

Rosseel, Y. (2012). Lavaan: An R package for Structural Equation Modeling. *Journal of Statistical Software, 48*(2), 1-36.

Rousseeuw, P. J., & Leroy, A. M. (1987). *Robust regression and outlier detection*. New York, NY: Wiley.

Roy-Byrne, P. P., Stang, P., Wittchen, H.-U., Ustun, B., Walters, E. E., & Kessler, R. C. (2000). Lifetime panic-depression comorbidity in the national comorbidity survey: Association with symptoms, impairments, course and help-seeking. *British Journal of Psychiatry, 176*, 229-235. doi: 10.1192/bjp.176.3.229

Rüsch, N., Angermeyer, M. C., & Corrigan, P. W. (2005). Mental illness stigma: concepts, consequences, and initiatives to reduce stigma. *European Psychiatry, 20*, 529-539. doi:10.1016/j.eurpsy.2005.04.004

Rüsch, N., Evans-Lacko, S., Henderson, C., Flach, C., & Thornicroft, G. (2011). Knowledge and attitudes as predictors of intentions to seek help for and disclose a mental illness. *Psychiatric Services, 62*, 675-678. doi: 10.1055/s-0031-1277794

Ryan, M. L., Shochet, I. M., & Stallman, H. M. (2014). Universal online interventions might engage psychologically distressed university students who are unlikely to seek formal help. *Advances in Mental Health, 9*, 73-83. doi:10.5172/jamh.9.1.73

Saleeby, J. R. (2000). Health beliefs about mental illness: An instrument development study. *American Journal of Health Behavior, 24*, 83-95. doi: 10.5993/ajhb.24.2.1

Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*, 507-514. doi:10.1007/bf02296192

Schnyder, N., Panczak, R., Groth, N., & Schultze-Lutter, F. (2017). Association between mental health-related stigma and active help-seeking: Systematic review and meta-analysis. *British Journal of Psychiatry, 210*, 261-268. doi:10.1192/bjp.bp.116.189464

Schofield, C. A., Dea Moore, C., Hall, A., & Coles, M. E. (2016). Understanding perceptions of anxiety disorders and their treatment. *Journal of Nervous and Mental Disorders, 204*, 116-122. doi:10.1097/NMD.0000000000000433

Schomerus, G., Appel, K., Meffert, P. J., Luppa, M., Andersen, R. M., Grabe, H. J., & Baumeister, S. E. (2013). Personality-related factors as predictors of help-seeking for depression: A population-based study applying the Behavioral Model of Health Services Use. *Social Psychiatry and Psychiatric Epidemiology, 48*, 1809-1817. doi:10.1007/s00127-012-0643-1

Schomerus, G., Matschinger, H., & Angermeyer, M. C. (2009). Attitudes that determine willingness to seek psychiatric help for depression: A representative population survey

applying the Theory of Planned Behaviour. *Psychological Medicine, 39*, 1855-1865. doi:10.1017/S0033291709005832

Shaffer, P. A., Vogel, D. L., & Wei, M. (2006). The mediating roles of anticipated risks, anticipated benefits, and attitudes on the decision to seek professional help: An attachment perspective. *Journal of Counseling Psychology, 53*, 442-452. doi:10.1037/0022-0167.53.4.442

Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika, 52*, 591-611. doi: 10.2307/2333709

Skogstad, P., Deane, F. P., & Spicer, J. (2006). Social-cognitive determinants of help-seeking for mental health problems among prison inmates. *Criminal Behavior and Mental Health, 16*, 43-59. doi:10.1002/cbm.54

Smith, C. L., & Shochet, I. M. (2011). The impact of mental health literacy on help-seeking intentions: Results of a pilot study with first year psychology students. *International Journal of Mental Health Promotion, 13*(2), 14-20. doi:10.1080/14623730.2011.9715652

Snowden, L. R., Collinge, W. B., & Runkle, M. C. (1982). Help seeking and underservice. In L. R. Snowden (Ed.), *Reaching the underserved: Mental health needs of neglected populations* (pp. 281-298). Beverly Hills, CA: Sage.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*, 173-180. doi:10.1207/s15327906mbr2502_4

Steinfeldt, J. A., England, B., Speight, Q. L., & Steinfeldt, M. C. (2009). Gender role conflict and help-seeking stigma among college football players. *Psychology of Men & Masculinity, 10*, 261-272. doi: 10.1037/a0017223

Steinmetz, H., Knappstein, M., Ajzen, I., Schmidt, P., & Kabst, R. (2016). How effective are behavior change interventions based on the theory of planned behavior? *Zeitschrift für Psychologie, 224*, 216-233. doi:10.1027/2151-2604/a000255

Suchman, E. A. (1965). Social patterns of illness and medical care. *Journal of Health and Human Behavior, 6*, 2-16. doi: 10.2307/2948614

Sylwestrzak, A., Overholt, C. E., Ristau, K. I., & Coker, K. L. (2015). Self-reported barriers to treatment engagement: Adolescent perspectives from the National Comorbidity Survey-Adolescent Supplement (NCS-A). *Community Mental Health Journal, 51*, 775-781. doi:10.1007/s10597-014-9776-x

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Upper Sadle River, NJ: Pearson Education, Inc.

ten Have, M., de Graaf, R., Vollebergh, W., & Beekman, A. (2004). What depressive symptoms are associated with the use of care services? *Journal of Affective Disorders, 80*, 239-248. doi:10.1016/s0165-0327(03)00132-0

Thomas, E. C., Luther, L., Zullo, L., Beck, A. T., & Grant, P. M. (2017). From neurocognition to community participation in serious mental illness: The intermediary role of dysfunctional

attitudes and motivation. *Psychological Medicine, 47,* 822-836. doi: 10.1017/S0033291716003019

Thompson, A., Hunt, C., & Issakidis, C. (2004). Why wait? Reasons for delay and prompts to seek help for mental health problems in an Australian clinical sample. *Social Psychiatry and Psychiatric Epidemiology, 39*, 810-817. doi:10.1007/s00127-004-0816-7

Van Voorhees, B. W., Fogel, J., Houston, T. K., Cooper, L. A., Wang, N. Y., & Ford, D. E. (2005). Beliefs and attitudes associated with the intention to not accept the diagnosis of depression among young adults. *Annals of Family Medicine, 3,* 38-46. doi:10.1370/afm.273

van Zoonen, K., Kleiboer, A., Beekman, A. T., Smit, J. H., Boerema, A. M., & Cuijpers, P. (2015). Reasons and determinants of help-seeking in people with a subclinical depression. *Journal of Affective Disorders, 173*, 105-112. doi:10.1016/j.jad.2014.10.062

VandenBos, G. R. (Ed.) (2015). *APA Dictionary of Psychology* (2nd ed.). Washington, DC, US: American Psychological Association.

Vogel, D. L., & Armstrong, P. I. (2010). Self-concealment and willingness to seek counseling for psychological, academic, and career issues. *Journal of Counseling & Development, 88*, 387-397. doi: 10.1002/j.1556-6678.2010.tb00038.x

Vogel, D. L., Gentile, D. A., & Kaplan, S. A. (2008). The influence of television on willingness to seek therapy. *Journal of Clinical Psychology, 64*, 276-295. doi:10.1002/jclp.20446

Vogel, D. L., Wade, N. G., & Hackler, A. H. (2008). Emotional expression and the decision to seek therapy: The mediating roles of the anticipated benefits and risks. *Journal of Social and Clinical Psychology, 27*, 254-278. doi: 10.1521/jscp.2008.27.3.254

Vogel, D. L., Wade, N. G., Wester, S. R., Larson, L., & Hackler, A. H. (2007). Seeking help from a mental health professional: The influence of one's social network. *Journal of Clinical Psychology, 63*, 233-245. doi:10.1002/jclp.20345

Vogel, D. L., & Wei, M. (2005). Adult attachment and help-seeking intent: The mediating roles of psychological distress and perceived social support. *Journal of Counseling Psychology, 52*, 347-357. doi:10.1037/0022-0167.52.3.347

Vogel, D. L., & Wester, S. R. (2003). To seek help or not to seek help: The risks of self-disclosure. *Journal of Counseling Psychology, 50*, 351-361. doi:1037/0022-0167.50.3.351

Vogel, D. L., Wester, S. R., Wei, M., & Boysen, G. A. (2005). The role of outcome expectations and attitudes on decisions to seek professional help. *Journal of Counseling Psychology, 52*, 459-470. doi: 10.1037/0022-0167.52.4.459

Wang, P. S., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Borges, G., Bromet, E. J., . . . Wells, J. E. (2007). Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. *The Lancet, 370*(9590), 841-850. doi:10.1016/s0140-6736(07)61414-7

Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the United States. *Archives of General Psychiatry, 62*, 629-640. doi: 10.1001/archpsyc.62.6.629

Wei, Y., McGrath, P. J., Hayden, J., & Kutcher, S. (2015). Mental health literacy measures evaluating knowledge, attitudes and help-seeking: A scoping review. *BMC Psychiatry, 15*, 291-311. doi:10.1186/s12888-015-0681-9

West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209-231). New York, NY: Guilford.

White, M., & Casey, L. (2017). Helping older adults to help themselves: The role of mental health literacy in family members. *Aginging and Mental Health, 21*, 1129-1137. doi:10.1080/13607863.2016.1206513

White, M. M., Clough, B. A., & Casey, L. M. (2018). What do help-seeking measures assess? Building a conceptualization framework for help-seeking intentions through a systematic review of measure content. *Clinical Psychology Review, 59*, 61-77. doi:10.1016/j.cpr.2017.11.001

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., . . . Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. *The Lancet, 382*(9904), 1575-1586. doi:10.1016/s0140-6736(13)61611-6

Whiteford, H. A., Ferrari, A. J., Degenhardt, L., Feigin, V., & Vos, T. (2015). The global burden of mental, neurological and substance use disorders: an analysis from the Global Burden of Disease Study 2010. *PLoS One, 10*(2), e0116820. doi:10.1371/journal.pone.0116820

Wilcox, R. R. (2012). *Introduction to robust estimation and hypothesis testing* (3rd ed.). Waltham, MA: Elsevier.

Wilcox, R. R., & Schönbrodt, F. D. (2018). The WRS package for robust statistics in R (Version 0.35). Retrieved from https://github.com/nicebread/WRS

Wilson, C. J., Deane, F. P., Ciarrochi, J., & Rickwood, D. J. (2005). Measuring help-seeking intentions: Properties of the General Help-Seeking Questionnaire. *Canadian Journal of Counselling, 39*, 15-28.

Wright, A., Jorm, A. F., Harris, M. G., & McGorry, P. D. (2007). What's in a name? Is accurate recognition and labelling of mental disorders by young people associated with better help-seeking and treatment preferences? *Social Psychiatry and Psychiatric Epidemiology, 42*, 244-250. doi:10.1007/s00127-006-0156-x

Yousaf, O., Grunfeld, E. A., & Hunter, M. S. (2015). A systematic review of the factors associated with delays in medical and psychological help-seeking among men. *Health Psychology Review*, 9, 264-276. doi:10.1080/17437199.2013.840954

Yuan, K.-H., & Bentler, P. M. (1998). Structural equation modeling with robust covariances. *Sociological Methodology, 28*, 363-396. doi:10.1111/0081-1750.00052

Appendix A: Extended Literature Review

Mental disorders are pervasive across the globe and are among the leading causes of disease burden (Demyttenaere et al., 2004; Kessler et al., 2011; Kessler et al., 2007). Depression alone is one of the primary causes of disability (Cuijpers et al., 2004; Whiteford et al., 2013). The impact of mental health disorders on the global burden of disease is substantial and continues to rise. In 2010, mental and substance use disorders accounted for over 183 million disability adjusted life years (DALYs), which is a World Health Organization (WHO) metric of disease burden calculated by summing years of life lost (YLL) due to premature mortality and years lost due to disability (YLD; Whiteford et al., 2015). It has been estimated that greater than $193 billion in lost wages annually are attributable to mental illness, while the burden of mental health care is greater than $300 billion over that same one-year period in the United States (Insel, 2008; Kessler et al., 2008). The estimated lifetime prevalence of any mental disorder globally has been found to range from 12% to 47%, with lifetime prevalence in the U.S. at 47% (Kessler et al., 2007). Epidemiological studies have consistently found that between 1 in 4 to 1 in 5 adults in the U.S. are in need of mental health services (Aneshensel et al., 2013).

While the prevalence and impact of mental illness is alone concerning, the situation becomes even more dire when one considers the finding that, in the United States, as many as 70% of individuals in need of services do not receive any services (Kessler et al., 2011). This difference in the proportion of individuals who have significant mental health needs and the proportion of those individuals who actually receive mental health care has become known as the *treatment gap* (Kohn, Saxena, Levav, & Saraceno, 2004). As Alan Kazdin (2017) puts it, “In the United States, millions of children, adolescents, and adults experience significant mental health problems and receive no help whatsoever.” (p. 8). The picture becomes grimmer still when one

accounts for disparities in service use in ethnic minority groups (McGuire & Miranda, 2008). Indeed, the treatment gap is an international problem, with greater than 84.7% of individuals in need worldwide did not receive treatment, according the WHO Mental Health Survey Consortium in 2004 (Demyttenaere et al., 2004).

While efforts to increase access to and utilization of mental health treatment services are greatly needed, the treatment gap extends beyond simple under-utilization of treatment, but also concerns the proportion of people with significant mental health concerns who are not receiving *minimally adequate treatment* which are treatments that follow evidence based guidelines for specific presenting problem and involve more than just one visit to a provider (Kazdin, 2017; Wang et al., 2005). Wang and colleagues (2005) analyzed data from the National Comorbidity Survey Replication (NCS-R; Kessler & Merikangas, 2004) and examined the proportion of individuals receiving adequate care, as well as the sociodemographic factors related to treatment and treatment adequacy. Data was collected from 9,282 adults (18 years and older) through face-to-face interviews that included a diagnostic assessment, an assessment of previous mental health service use, an assessment of the quality of treatment received, and sociodemographic information including age, race-ethnicity, education, marital status, income, urbanicity, and health insurance coverage. While their analysis provided a wealth of information, one finding stands out as particularly striking. Across the entire sample of 9,282 individuals, only one-third (32.7%) were found to be receiving or had received minimally adequate treatment. That is, two-thirds of individuals requiring mental health services are not receiving treatments based on evidenced-based guidelines.

In addition to the previous research that has provided robust evidence of the treatment gap as it relates to the under-utilization of treatment in general and the under-utilization of

adequate treatment specifically, research has also found evidence of under-utilization due to premature drop-out from treatment (Mojtabai et al., 2011; van Zoonen et al., 2015; Wang et al., 2007). Thus, despite the well-documented high need for mental health care and the plethora of research demonstrating the effectiveness of treatment (e.g., APA, 2013; Carr, 2009; Cuijpers et al., 2008), individuals with mental health needs in the U.S. and across the world are not seeking help or getting the help they need. Left untreated, mental illnesses result in substantial personal consequences (e.g. loss of independence), social consequences (e.g. loss of significant relationships), and economic consequences (e.g. increased health care expenditures) that further exasperate the symptoms of mental disorders (Andrade et al., 2014; Whiteford et al., 2013; Whiteford et al., 2015). Thus, programs of research are needed to delineate the factors that facilitate and prevent individuals from seeking treatment for mental health concerns.

Why are so many individuals not willing or able to seek help when experiencing significant mental health issues? Research has aimed at answering this question and more has proliferated over the past few decades. As more evidence of the "treatment gap" has been found, the research literature has responded with a plethora of research concerned with describing and quantifying the barriers that individuals face when considering reaching out for help. These barriers have most often been divided into structural barriers (e.g. transportation, costs) and psychosocial or attitudinal factors (e.g. attitude towards mental health care, stigma). A systematic review by Gulliver, Griffiths, and Christensen (2010) identified a variety of barriers to young adults utilizing treatment, including perceived stigma, lack of accessibility, a preference for self-reliance, difficulty identifying symptoms, and lack of knowledge about services. Other authors have also provided support for these barriers, and identified additional barriers, such as low perceived need for treatment and perceived ineffectiveness of treatment (Andrade et al., 2014;

Gulliver et al., 2010; Mojtabai et al., 2011), preferring to attempt to handle problems on one's own (Mackenzie et al., 2010; Sylwestrzak et al., 2015), and perceived stigma (Angermeyer & Dietrich, 2006; Barney et al., 2006; Clement et al., 2014; Henderson et al., 2013). Additionally, structural barriers such as financial constraints, low availability of services, and lack of transportation have also shown some importance; but when compared with psychosocial barriers, structural barriers appear to be less important (see Andrade et al., 2014; Mojtabai et al., 2011).

Research examining the social, psychological, and demographic antecedents to help seeking has burgeoned in recent decades (e.g. see Mackenzie, Erickson, Deane, & Wright, 2014; Rickwood & Thomas, 2012). As discussed, previous research has identified a variety of factors associated with help seeking decisions, with the most consistently examined factors including attitudes towards mental illness and mental health care (Mak & Davis, 2014; Mo & Mak, 2009; Schomerus et al., 2009; Skogstad et al., 2006), perceived and actual stigma towards mental illness and treatment (Corrigan et al., 2014; Pattyn et al., 2014; Schnyder et al., 2017), psychological distress (ten Have et al., 2004; Thompson et al., 2004), and individual traits (Kakhnovets, 2011; Vogel & Wei, 2005). However, much of the existing help seeking literature lacks a coherent theoretical foundation and many of the factors frequently found to be related to help seeking in some studies are often found to be unrelated in other studies. To remedy this situation, help-seeking research should aim to construct theoretically grounded models that integrate factors that have previously been shown to have a significant impact on help-seeking (see Henshaw & Freedman-Doan, 2009). Several models of help-seeking have been developed, which will be discussed next.

Models of Health Behavior

Theories and models not only provide direction for individual research endeavors but also significantly contribute to the ability to explain behavior and to suggest ways to achieve behavior change (Glanz et al., 2008). It is important to recognize that health behavior and help-seeking specifically involve concepts and processes that are far too complex to be fully captured by a single, unified model. However, before a discussion of help-seeking models can be had, agreement on what is meant by help-seeking needs to be established.

Help-seeking. With a greater understanding of the treatment gap and the profound consequences of mental illnesses globally, significant emphasis on understanding and encouraging help seeking behaviors has become a major priority for researchers, clinicians, and policy-makers. While recent decades have seen a proliferation of research concerned with help seeking, the construct of help seeking has been defined and operationalized in a variety of ways. Formally, the American Psychological Association's Dictionary of Psychology (VandenBos, 2015) defines *help-seeking behavior* as "searching for or requesting help from others via formal or informal mechanisms, such as through mental health services" (p. 489). This entry also directs the reader to *treatment-seeking behavior* which is defined as "the active pursuit of treatment by a person who has a disorder or who wishes to improve his or her general mental or physical functioning" (p. 1105). From these two definitions alone, one can see the potential for a wide range of interpretations, such as formal help-seeking (from a mental health professional), which could be considered both treatment-seeking and help-seeking versus informal help-seeking (from a friend or family member), which may fall under the definition of "help-seeking" but not "treatment-seeking". To avoid confusion, this paper will utilize the terms "help-seeking" or "help-seeking behaviors" to refer only to the act of seeking out formal help from a mental health care provider.

In the context of health care, the concept of help-seeking can be traced back to the work of Mechanic (1966, 1976, 1982, 1992) and his concept of "illness behavior". Mechanic defined illness behavior as encompassing the behaviors in which people engage as they monitor their health, how they define and interpret symptoms when they arise, the preventative actions people take or remedial actions they take, and ultimately how they utilize the health care system (Rickwood & Thomas, 2012). Following Mechanic's (1962a) delineation of illness behaviors as a concept, various models of illness behaviors were posited (e.g., Aday & Andersen, 1974; Andersen, 1995; Fabrega, 1973; Mechanic, 1962b; Suchman, 1965), all of which conceptualize help-seeking as an integral component of the illness behavior process. Mechanic and many other theorists that followed him defined help seeking as an adaptive form of coping utilized by individuals as they work through the illness process. As specific lines of research focusing on help-seeking have evolved, this definition was revised to include the idea that help seeking is an active and problem-focused coping strategy, often involving communication of this need for help to another person (Rickwood & Braithwaite, 1994; Rickwood & Thomas, 2012).

Fabrega (1973) posited the decision theoretic model of illness behavior, building off a number of existing theories of the time and contributing significantly to future manifestations of health behavior models. Fabrega observed that the information that individuals derive from their body when they are in a state of illness is very much subject to personal interpretations. Fabrega saw these personal interpretations as stemming directly from distinctive sociocultural traditions and personal experiences. It is because of these distinctive sociocultural and personal experiences that Fabrega stated the following regarding the modeling of health behaviors: "…the variable and fluid nature of illness occurrences and the many diverse ways in which persons are

able to define and cope with them represents a formidable obstacle to those interested in modeling its salient characteristics" (p. 472).

Despite the difficulty in modeling health behaviors, models of health behavior have continued to be posited, tested, modified, and retested. Glanz, Lewis, and Rimmer (1990) identified 51 distinct health behavior models from a review of the health behavior literature, and when their review was updated in 2007, they found the same health behavior models continued to dominate the literature. Two of the most widely studied and cited behavior models are the theory of planned behavior (TPB; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010) and the health belief model (HBM; Hochbaum, 1958; Rosenstock, 1974; Rosenstock, 1990). What follows is a brief overview of the TPB and some of the empirical support for its use in help seeking research, followed by an overview of the HBM and the studies that support its use in help-seeking research and how the HBM fits into the general framework of the TPB.

The theory of planned behavior. The TPB is an extension of the theory of reasoned action (TRA; Fishbein, 1967), developed as a means to better understand the relationships between attitudes, intentions to engage in a behavior, and actual behavior. The TRA asserts that the best predictor of behavior is behavioral intention. The determinants of behavioral intentions are posited to be one's attitude toward performing the behavior and one's subjective norm associated with the behavior. According to the TRA, one's attitude toward performing a behavior is a product of their beliefs about the anticipated outcomes or attributes of performing the behavior (behavioral beliefs). Likewise, an individual's subjective norm associated with a behavior is a product of what Fishbein called normative beliefs, or the beliefs an individual has about whether important individuals in their life approve or disapprove of performing the behavior.

One of the limitations of the TRA concerns its limited ability to explain or predict behaviors that are not necessarily under volitional control. Based on the idea that engaging in a behavior is at least partly determined by one's motivation (intention) and one's actual ability to engage in the behavior, Ajzen (1991) added a third determinant of intention to the TRA, perceived behavioral control (Figure 7), creating the TPB. Perceive behavioral control is a product of control beliefs (i.e. the presence of facilitators or barriers to performing the behavior) and an individual's perceived sense of power over control factors.

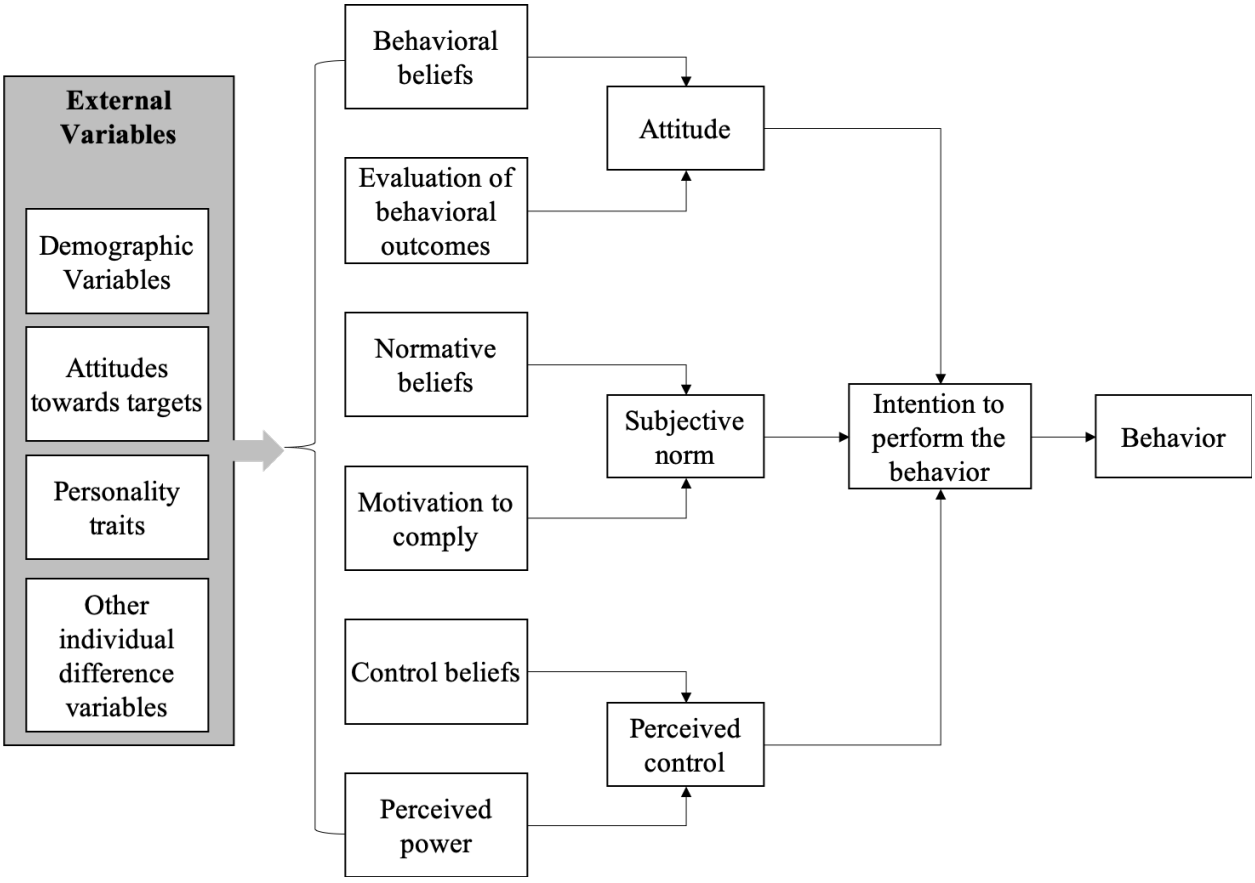

Figure 8. The theory of reasoned action/theory of planned behavior. Reproduced from Montaño and Kasprzyk (2008)

Thus, like the TRA, the TPB posits that one's actual help-seeking behavior is best predicted by one's intention to engage in help-seeking behavior. Intention to engage in a

behavior is modeled as the product of three factors: one's attitude towards the behavior, the subjective norms one associates with performing the behavior, and one's perceived mastery of and control over engagement in the behavior. These three factors (attitudes, perceived norms, and perceived control) are conceptualized as products of beliefs individual's hold, termed behavioral beliefs, normative beliefs, and control beliefs, respectively (Fishbein & Ajzen, 2010). That is, the key components of the TPB, in the context of help-seeking behavior, are at least partially derived from beliefs about mental health, mental illness, and one's ability to prevent and/or manage their mental well-being. The validity of the TPB as it applies to help seeking has been supported by previous research with college students (Hess & Tracey, 2013; Hunt & Eisenberg, 2010) and general community members (Mak & Davis, 2014; Schomerus et al., 2009). The TPB has also demonstrated an ability to predict behavior change in intervention studies of both physical and mental health (see Steinmetz et al., 2016). The core components of the TPB are products of beliefs about behavior, such as the belief components posited by the health belief model.

Health belief model. The health belief model (HBM) is an expectancy-value model of health behavior, developed in the 1950s by a group of social psychologists working for the Public Health Service, namely: Drs. Godfrey Hochbaum (often highly regarded for his unparalleled contributions to the effort to translate abstract social psychological theory to real life applications, such as through the HBM), Stephen Kegeles, Howard Leventhal (who would later develop the self-regulation model of illness perceptions), and Irwin Rosenstock. The authors of the original HBM were strongly committed to the phenomenological perspective, which is strongly reflected in the underlying assumptions of the HBM (Rosenstock, 1974). That

is, it is not the physical environment that determines how an individual will behave but rather it is the individual's perception of the physical world that determines what they will do.

The HBM was primarily developed as a framework for understanding why individuals engage in or fail to engage in proactive and preventative health behaviors, such as seeking help when symptoms arise, adhering to medication regimens, or getting mammograms at suggested times. The HBM is one of the most widely used frameworks for understanding health behaviors and provides a useful framework for modeling the effects of individual level and contextual level factors on behavior (Glanz et al., 2008). The HBM is based on the theory that individuals are more likely to engage in health-promoting behavior to the extent that they believe that they are susceptible to a related health problem, believe there are severe consequences related to having that problem, believe that treatment or prevention behaviors will be effective at reducing risk or treating symptoms, and believe there are few barriers that could prevent action from being taken (Rosenstock, 1974, 1990).

In the context of seeking help from a mental health provider, the HBM (Figure 1), in its original form proposes five core beliefs that guide an individual's help-seeking behavior: (a) perceived susceptibility to mental illness; (b) perceived severity or seriousness of the consequences related to having a mental illness; (c) perceived benefits of seeking help for a mental illness; (d) perceived barriers between an individual and seeking mental health care; and (e) individuals' general health motivation (GHM). Susceptibility, severity, and GHM are considered individual perceptions that jointly predict a perceived level of threat presented by a particular illness. Perceived level of threat, along with an individual's perceived benefits of seeking help minus the individual's perceived barriers to seeking help, predict an estimate of the likelihood that the individual will seek help. In addition to these core beliefs, Rosenstock (1990)

also emphasized the importance of demographic and psychosocial factors on health behaviors. As can be seen in Figure 1, these modifying factors influence individuals' perceived threat of illness, as well as perceptions individuals have regarding the barriers and benefits to seeking help.

The final component of the HBM is *cues to action*, or stimuli that remind or reinforce the severity or threat posed by mental illness. Cues can come in a variety of forms such as a television ad for an antidepressant, a primary care physician's probing questions, or the moment individuals label something in their experience as a "symptom". Rosenstock et al. (1988) expanded the HBM to include a self-efficacy component, proposing that an understanding of one's expectation about their ability to influence outcomes is critical in predicting health behavior outcomes. Relationships between and among the major components of the HBM are not defined, which is an ambiguity that has resulted in a variety of HBM applications, with some researchers using a more multiplicative approach whereas others have modeled the components as more independent of each other. Thus, further exploration of the relationship between components is needed in order to advance our understanding of how various components affect others.

The literature examining mental health beliefs using the HBM is significantly limited compared to literature examining the application of the HBM to physical health beliefs (Choudhry et al., 2016). The literature examining physical health behaviors has frequently supported the use of the HBM for understanding health decision-making across a wide variety of areas, including smoking cessation (Mantler, 2012), HPV vaccination (Radisic et al., 2017), medication adherence (Conn et al., 2016), physical activity (Plotnikoff et al., 2013), and a variety of other health behaviors (see Carpenter, 2010; Harrison et al., 1992). In a meta-analysis

examining the effectiveness of the HBM variables in predicting physical health behaviors, Carpenter (2010) identified perceived benefits and perceived barriers as being the strongest predictors of behaviors, with the caveat that there are a number of moderators in the relationships between HBM variables and behavior, ultimately recommending that HBM variables be modeled as indirect predictors of health behaviors.

While application of the HBM to mental health conditions and mental health treatment behaviors has been limited, there are important clinical and academic implications for the study of mental health related behaviors through the lens of the HBM (Henshaw & Freedman-Doan, 2009). Evidence for the validity of the HBM's ability to predict treatment behaviors related to mental disorders has been mixed but previous findings suggest that the HBM constructs are, to some degree, important when predicting mental health behaviors (e.g. Castonguay et al., 2016; Kim & Zane, 2016; Nobiling & Maykrantz, 2017). O'Connor et al. (2014) examined HBM factors as predictors and moderators of help-seeking intentions in a college student convenience sample. These authors found that of the six HBM factors assessed, only perceived benefits and perceived barriers were significant predictors of intentions in a multiple regression analysis (perceived susceptibility, severity, self-efficacy, and general health motivation were not significant predictors). Perceived susceptibility was found to be predictive of intentions only when the relationship was moderated by general health motivation (GHM) and perceived benefits. Specifically, susceptibility predicted intentions only when individuals reported high GHM or they believed there were benefits to getting help.

Langley et al. (2017) examined the utility of the HBM in predicting help seeking behavior specifically for anxiety disorders in a sample of Australian college students. While the authors report numerous times that their results provide support for the utility of the HBM in

predicting help-seeking intentions, they actually only found support for the utility of perceived benefits as a predictor of help-seeking intentions. However, Langley et al.'s (2017) operationalization of perceived benefits is highly problematic, as they measured the construct using the attitudes toward seeking professional psychological help scale (ATSPPHS; Fischer & Turner), which has significant conceptual overlap with measures of intentions to seek help (Ægisdóttir & Gerstein, 2009). Further, there is reason to believe that operationalizations of attitudes toward seeking psychological help and perceived benefit overlap conceptually, resulting in artifactual correlations. Bistricky et al. (2017) examined college students' intent to use stress reduction techniques as predicted by HBM constructs. General health motivation was the only robust predictor of intention to use stress reduction techniques, predicting a wide range of techniques, while susceptibility, benefits, and barriers were only marginally significant and predicted the use of only one technique.

Kim and Zane (2016) utilized the HBM framework to predict help seeking intentions and to examine the mediating role of susceptibility, severity, benefits, and barriers in the relationship between ethnicity (Asian American, White American) and help-seeking intentions. Of the four HBM components they examined, benefits, barriers, and severity were found to be significant predictors of help-seeking intentions, with benefits by far being the strongest predictor. However, like other studies, these authors utilized a more idiosyncratic operationalization of the HBM constructs. For example, they used a measure of mental health literacy as a proxy for susceptibility rather than an instrument intended to measure the HBM construct of susceptibility.

While the HBM has been found to adequately predict a range of physical and mental health behaviors, there are still significant criticisms of the model, especially in relation to its ability to predict longer term outcomes (see Linke et al., 2013). Indeed, Carpenter (2010) in their

meta-analysis of the literature found that the HBM, and specifically the constructs of perceived susceptibility and perceived severity, were only weakly predictive (if at all) of long-term behavioral outcomes. Another criticism of the model includes the ambiguity in the relationships between and among the HBM components and the lack of standardized measurement tools for some of the HBM components. Finally, while some studies have supported the use of the HBM as a predictive behavior model (e.g., Gammage & Klentrou, 2011; Park, 2011), other models have demonstrated relatively stronger predictive ability of health behavior (see Linke et al., 2013). However, there is a scarcity of research utilizing the HBM as a guiding model for help-seeking research and the few studies that have utilized the HBM are not enough to garner any sweeping conclusions regarding the efficacy of the HBM in explaining or predicting help-seeking behaviors.

Limitations of Health Behavior Models

In order to address some of the limitations of the HBM and the limitations present in other theories attempting to explain or predict health behavior (such as the TPB) many theorists and researchers have argued for the development and testing of integrated models of health behavior (e.g., Holmes, Hughes, & Morrison, 2014; Reid & Aiken, 2011; White, Clough, & Casey, 2018). At a more macro-level, Linke et al. (2013) argued that the study of health behavior in general should focus more on models with a more interpersonal and ecological focus rather than continuing to pursue models of health behavior that have an individual level focus, such as the HBM and the TPB. However, the distinction between individual level, interpersonal level, and ecological level models that Linke et al. (2013) attempted to delineate is flawed and misleading. Specifically, they disregarded the underlying theories that inform the models that they label as “individual” level models, theories that do indeed incorporate interpersonal-level

influences (e.g., perceived norm in the TPB) and ecological-level determinants (socio-demographic modifying factors in the HBM).

Building better models of health behaviors does not require the disposing of existing models of behavior, but rather the integration of models in theoretically and clinically meaningful ways. To this end, an integration of components of the HBM with the theoretical framework that underlies the TPB seems viable. Specifically, it seems reasonable to examine the ability of the HBM components to account for variance in individuals' behavioral intentions to seek help, recognizing the primacy of behavioral intentions in predicting actual behavior. Additionally, extending the HBM to include a self-efficacy component, a construct that transcends the TPB and HBM in its importance as a determinant of behavior. The HBM components are theoretically consistent with the TPB attitude, subjective norm, and perceived behavioral control components, in that they are conceptually equivalent to the believe constructs hypothesized to be proximal predictors of attitudes, subjective norms, and behavioral control (Fishbein & Ajzen, 2010). Thus, within the mental health help seeking context, expansion of the HBB to include background sociodemographic factors hypothesized to influence health beliefs would be important. One of these factors pertains to individuals' background knowledge regarding mental health care and mental illnesses, often referred to as mental health literacy.

Mental Health Literacy

As discussed previously, barriers to seeking mental health care have frequently been categorized into structural barriers and psychosocial/attitudinal barriers. However, Thompson et al. (2004) suggested a third dimension that captures knowledge of mental health and illness, which they argued should be considered separate from attitudinal barriers. Mental health literacy (MHL) has frequently been defined and operationalized in previous research as including:

knowledge of and beliefs about mental disorders, the ability to recognize or identify mental illness, knowledge of how to manage and promote mental health, and knowledge related to prevention (Bonabi et al., 2016; Jorm, 2012; Kutcher et al., 2016). In other words, persons who are mental health literate are able to recognize specific disorders, are knowledgeable of the likely course and consequences of specific disorders and are knowledgeable on how to cultivate mental health. In contrast, those with low MHL do not recognize symptoms or appropriately attribute them to a disorder, are unaware of the treatability of mental illness and the various providers of mental health care, and do not know how to prevent mental illness and nurture their mental wellness.

The effects of low MHL have a trickle-down effect, whereby individuals who need services (have a diagnosable mental illness) frequently go without it, due to not understanding that their symptoms can be treated, that these treatments are strongly supported by empirical evidence, and that interventions from alternative medicine frequently do not have evidence to support them (Coles & Coleman, 2010; Gulliver et al., 2010; Kutcher et al., 2016; Picco et al., 2016). As discussed previously, low perceived need for treatment is one of the most frequently endorsed barriers to seeking help. Andrade et al. (2014) speculated that one possible reason for the consistent finding of low perceived need for treatment is low MHL and ineffective health beliefs due to low MHL.

Bonabi and colleagues (2016) examined MHL, attitudes to help seeking, and perceived need as predictors of psychotherapy use and psychiatric medication use over a period of 6 months in a sample of 172 Swiss adults. Results demonstrated that MHL significantly predicted use of psychotherapy over time, independent of perceived need and attitudes toward help seeking. A significant number of other studies have also provided support for the relationship

between MHL and help-seeking outcomes. High MHL has been found to be associated with an increased likelihood of seeking help, being able to help others with a mental illness, and reduced stigma (Gabriel & Violato, 2010a). Individuals with high MHL are also better able to identify mental disorders and be more knowledgeable of appropriate resources for treatment. In contrast, individuals with low MHL terminate from therapy early and engage in maladaptive coping behaviors (Jorm, 2012; Reavley & Jorm, 2011a, 2011b; Rüsch et al., 2011). Previous studies evaluating interventions targeting MHL have found that increases in MHL predicts positive attitudes toward seeking psychological help and decreases in stigmatizing attitudes (Gabriel & Violato, 2010b; Rüsch et al., 2011). Additionally, individuals with high MHL are less likely to delay seeking care for themselves and recommend care for others through being better able to identify symptoms and other warning signs in their self, as well as in others (Jorm, 2012; King et al., 2008; Mendenhall et al., 2013).

Importantly, it should be noted that while there has been a significant amount of support for the importance of MHL in predicting positive attitudes towards seeking help, decreased stigma towards the mentally ill and towards treatment, and actual help-seeking behavior, there can be unintended negative consequences related to campaigns aimed at increasing MHL. Studies have found that when individuals have a strong biologically-oriented level of MHL, this can actually lead to desiring greater social distance from individuals with a mental illness (Angermeyer, Matschinger, & Schomerus, 2013; Schnyder et al., 2017; Schomerus et al., 2013)

Previous research has also suggested significant relationships exist between MHL and the components of the HBM. It seems likely that an individuals' knowledge and understanding of mental illness will have an impact on the health beliefs they develop, indirectly impacting the likelihood that they will seek help (Petrie et al., 2009). Previous research suggests that MHL is

distinct from HBM sociocognitive factors such as perceived susceptibility and perceived severity but related to these factors (Kim & Zane, 2016). Moreover, Fishbein and Ajzen (2010) included the concept of "knowledge" as a background factor that influences beliefs and subsequently intentions through its effect on more proximal predictors (e.g. attitudes). Previous research has found that mental health literacy and problem recognition (strongly associated with MHL) are strongly associated with intentions to seek help (e.g. Wright et al., 2007) and conceptual models of help seeking have called for the integration of MHL in established help-seeking models like the TPB (e.g. Rickwood & Thomas, 2012).

Consistent with the theme of integrating existing health behavior models, the inclusion of MHL as a determinant of help-seeking is consistent with theory underlying both the HBM and the TPB. Both models recognize the moderating effects of potential background sociodemographic factors. However, the inclusion of a knowledge or information factor along with attitudes, beliefs, and self-efficacy is consistent with another popular model of health behavior, the information-motivation-behavioral skills (IMB) model (Fisher & Fisher, 1992). The IMB is built on a simple premise that in order for an individual to engage in a health behavior they must be informed, be motivated, and be behaviorally skilled. Thus, in the context of help-seeking behavior, the IMB would suggest that in order for an individual to seek help for a mental health concern they would need to have a certain degree of MHL (information), along with positive attitudes and health beliefs (motivation), which would be predictive of perceived self-efficacy in seeking help (behavioral skills), leading to an increased likelihood of seeking help. A complete description of the IMB is beyond the scope of this paper, but it is included to demonstrate how distinct models and theories of health behavior can be integrated as a coherent, theory-driven, empirically-supported model of behavior.

Given the volume of literature demonstrating the influence that MHL has on help-seeking behavior, any attempt at constructing a conceptual model of help-seeking behavior would be amiss to neglect MHL as an integral component. Additionally, the concept of MHL in the research literature has frequently been so ambiguous and amorphous in its operationalization, as to render any general statements about associations between MHL and HBM factors useless, if not misleading. For example, Wei et al. (2015) cited 69 different measures of mental health knowledge. While it is clear that some kind of "mental health knowledge" is linked to treatment seeking, studies of MHL to date have failed to consolidate the many definitions of MHL and have not tested how it relates to the sociocognitive models that have also demonstrated efficacy in predicting treatment seeking.

Background Sociodemographic Factors

Gender. Previous research has consistently found that, compared to their male counterparts, women have more positive attitudes towards help seeking and are more likely to seek help (Ægisdóttir & Gerstein, 2009; Atik & Yalcin, 2011; Mackenzie et al., 2006; Rickwood & Braithwaite, 1994; Vogel et al., 2007). A relatively recent meta-analysis of studies using college students and examining the effects of gender on attitudes toward help seeking found that gender is an important determinant of help seeking attitudes and ultimately behavior, with women holding more positive attitudes towards help seeking (Nam et al., 2010). Men have been found to have difficulty with or be uncomfortable with emotional expression and question the helpfulness of treatment, which impede the likelihood that they will seek help (Cusack et al., 2006; Möller-Leimkühler, 2002). Relatedly, men are less likely to perceive distress as severe enough to warrant asking for help and are more likely to believe they should work it out alone (Andrade et al., 2014).

In a systematic review of 41 studies, Yousaf, Grunfeld, and Hunter (2013) identified numerous barriers to men seeking help, including cognitive, emotional, health-service related, and sociodemographic barriers. Most prominent of the barriers identified included embarrassment/anxiety/distress/fear related to using health-care services, a resistance to being vulnerable, a desire to remain in control of emotions, minimizing symptoms, and poor rapport and communication with health professionals. This review, along with previous studies (Cusack et al., 2006; Noone & Stephens, 2008; Steinfeldt et al., 2009), supports the notion that adherence to traditional masculinity norms is a hindrance to men's willingness to seek help. Prior research has also demonstrated a significant difference between men and women on measures of MHL. Gorczynski, Sims-Schouten, Hill, and Wilson (2016) examined the associations between MHL, mental health outcomes, and intentions to seek professional care in a sample of 380 university students in England. These authors found that women scored significantly higher on a measure of MHL compared with their male counterparts, which was then related to higher scores on intentions to seek help.

Prior help seeking. Individuals form their beliefs and attitudes towards objects and situations largely from their experiences with and knowledge of the object or situation (Fabrigar & Wegener, 2010). Thus, it is not surprising that previous research has frequently found that when compared with individuals with no previous counseling or help seeking, individuals who have previous counseling experiences have more positive attitudes towards seeking help and greater intentions to seek help in the future (Ægisdóttir & Gerstein, 2009; Gum, Iser, & Petkus, 2010; Hammer, Spiker, & Perrin, 2019; Kahn & Williams, 2003) as well as their level of mental health literacy (Gorczynski et al., 2016). Kakhnovets (2011), in a sample of undergraduate students, found significant differences on a measure of attitudes towards help seeking between

students with and students without previous counseling experience. It was also found that students with previous counseling experiences had a greater understanding of the counseling process and the expectations for counseling.

Some studies have also indicated that the impact of previous help seeking is specific to positive help-seeking experiences. That is, individuals are more likely to seek help in the future in so much as their past experience with seeking help from a mental health professional was a positive experience (Wilson, Deane, Ciarrochi, & Rickwood, 2005). Gulliver et al. (2010) reported on a systematic review of 22 studies that examined the barriers and facilitators to help-seeking in adolescents and young adults. These authors found that one of the consistent facilitators of help-seeking across studies was positive past experiences with help-seeking. While many studies have reported significant associations between previous counseling experiences and current attitudes, it should be noted that others have failed to replicate these findings (e.g., Koydemir-Özden & Erel, 2010).

Psychological distress. One of the earliest predictors of help seeking to be offered was psychological distress, based on the logic that individuals likely would not be seeking professional help if they were not experiencing a certain degree of distress. Ingham and Miller (1986) examined the factors that discriminate between patients who consulted with their primary care physician and those who did not consult their physician. Ingham and Miller found that symptom severity was the most potent discriminating factor, with individuals who reported higher levels of distress being more likely to ultimately seek consultation with their physician for both physical and psychological distress. Cramer (1999) would later build on Ingham and Miller's work, hypothesizing that psychological distress would be a significant predictor of seeking professional psychological help. Path analyses supported this hypothesis, as Cramer

found that individuals were more likely to seek help when distress is high and attitudes towards seeking help are positive. A great deal of research supporting the relationship between psychological distress and help seeking has been published over the last two decades (Fischer & Farina, 1970; Kahn & Williams, 2003; Kim & Omizo, 2003; Ryan et al., 2014; Shaffer et al., 2006; Vogel & Armstrong, 2010; Vogel, Wade, et al., 2008; Vogel & Wei, 2005). However, a large number of studies have also found no relationship between level of psychological distress, attitudes toward help seeking, and intention to seek help (Çebi, 2009; Cheang & Davis, 2014; A. E. Kelly & Achter, 1995; P. Y. Kim & Park, 2009; Vogel, Gentile, et al., 2008; Vogel & Wester, 2003; Vogel et al., 2005).

Conclusions

In sum, a great deal of research has examined the barriers and facilitators of seeking mental health care but much of this research has not utilized theoretically-guided theories of behavior to organize the factors related to seeking help. While there are many health behavior models and other theories of behavior, two popular models utilized in the health behavior literature are the HBM and the TPB. Both of these models have demonstrated effectiveness in predicting health behaviors both mental and physical health, but much more research has examined these models in relation to health behaviors. The two models are particularly well-suited to be integrated into a more comprehensive model of help-seeking behavior. Specifically, the TPB proposes beliefs about a behavior to be core components in the prediction of intentions to engage in a behavior, while the HBM emphasizes modeling the relationship amongst beliefs regarding a specific health behavior and their relationship to a more general “health outcome”. When combined, these two models provide a framework for translating beliefs (HBM) into

attitudes, perceived norms, perceived behavior control, and intentions to engage in the target behavior, in this case, help-seeking for mental health care.

References

Aday, L. A., & Andersen, R. (1974). A framework for the study of access to medical care. *Health Services Research, 9*, 208-220.

Ægisdóttir, S., & Gerstein, L. H. (2009). Beliefs About Psychological Services (BAPS): Development and psychometric properties. *Counselling Psychology Quarterly, 22*, 197-219. doi:10.1080/09515070903157347

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211. doi:10.1016/0749-5978(91)90020-T

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of health and social behavior, 36,* 1-10. doi:10.2307/2137284

Andrade, L. H., Alonso, J., Mneimneh, Z., Wells, J. E., Al-Hamzawi, A., Borges, G., . . . Kessler, R. C. (2014). Barriers to mental health treatment: Results from the WHO World Mental Health surveys. *Psychological Medicine, 44*, 1303-1317. doi:10.1017/S0033291713001943

Aneshensel, C. S., Phelan, J. C., & Bierman, A. (Eds.). (2013). *Handbook of the sociology of mental health* (2nd ed.). New York, NY: Springer.

Angermeyer, M. C., & Dietrich, S. (2006). Public beliefs about and attitudes towards people with mental illness: A review of population studies. *Acta Psychiatrica Scandinavia, 113*, 163-179. doi:10.1111/j.1600-0447.2005.00699.x

Angermeyer, M. C., Matschinger, H., & Schomerus, G. (2013). Attitudes towards psychiatric treatment and people with mental illness: changes over two decades. *British Journal of Psychiatry, 203*, 146-151. doi:10.1192/bjp.bp.112.122978

Atik, G., & Yalcin, I. (2011). Help-seeking attitudes of university students: The role of personality traits and demographic factors. *South African Journal of Psychology, 41*, 328-338. doi:10.1177/008124631104100307

Barney, L. J., Griffiths, K. M., Jorm, A. F., & Christensen, H. (2006). Stigma about depression and its impact on help-seeking intentions. *Australian and New Zealand Journal of Psychiatry, 40*, 51-54. doi:10.1080/j.1440-1614.2006.01741.x

Bistricky, S., L., Harper, K. L., Roberts, C. M., Cook, D. M., Schield, S. L., Bui, J., & Short, M. B. (2017). Understanding and promoting stress management practices among college students through an integrated health behavior model. *American Journal of Health Education, 49*, 12-27. doi:10.1080/19325037.2017.1377651

Bonabi, H., Muller, M., Ajdacic-Gross, V., Eisele, J., Rodgers, S., Seifritz, E., . . . Rusch, N. (2016). Mental health literacy, attitudes to help seeking, and perceived need as predictors of mental health service use: A longitudinal study. *The Journal of Nervous and Mental Disease, 204*, 321-324. doi:10.1097/NMD.0000000000000488

Carr, A. (2009). The effectiveness of family therapy and systemic interventions for adult-focused problems. *Journal of Family Therapy, 31*, 46-74. doi:10.1111/j.1467-6427.2008.00452.x

Castonguay, J., Filer, C. R., & Pitts, M. J. (2016). Seeking help for depression: Applying the health belief model to illness narratives. *Southern Communication Journal, 81*, 289-303. doi:10.1080/1041794x.2016.1165729

Çebi, E. (2009). *University students' attitudes toward seeking psychological help: Effects of perceived social support, psychological distress, prior help-seeking experience, and gender* (Master's thesis). Retrieved from https://etd.lib.metu.edu.tr/upload/12610828/index.pdf

Cheang, S. I., & Davis, J. M. (2014). Influences of face, stigma, and psychological symptoms on help-seeking attitudes in Macao. *Psych Journal, 3*(3), 222-230. doi:10.1002/pchj.61

Choudhry, F. R., Mani, V., Ming, L. C., & Khan, T. M. (2016). Beliefs and perception about mental health issues: A meta-synthesis. *Neuropsychiatric Diseases and Treatment, 12*, 2807-2818. doi:10.2147/NDT.S111543

Clement, S., Schauman, O., Graham, T., Maggioni, F., Evans-Lacko, S., Bezborodovs, N., . . . Thornicroft, G. (2014). What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological Medicine, 45*, 11-27. doi:10.1017/S0033291714000129

Coles, M. E., & Coleman, S. L. (2010). Barriers to treatment seeking for anxiety disorders: Initial data on the role of mental health literacy. *Depression and Anxiety, 27*, 63-71. doi:10.1002/da.20620

Conn, V. S., Enriquez, M., Ruppar, T. M., & Chan, K. C. (2016). Meta-analyses of theory use in medication adherence intervention research. *American Journal of Health Behavior, 40*, 155-171. doi:10.5993/ajhb.40.2.1

Cramer, K. M. (1999). Psychological antecedents to help-seeking behavior: A reanalysis using path modeling structures. *Journal of Counseling Psychology, 46*, 381-387. doi:10.1037/0022-0167.46.3.381

Cuijpers, P., de Graaf, R., & van Dorsselaer, S. (2004). Minor depression: Risk profiles, functional disability, health care use and risk of developing major depression. *Journal of Affective Disorders, 79*, 71-79. doi:10.1016/s0165-0327(02)00348-8

Cuijpers, P., van Straten, A., Andersson, G., & van Oppen, P. (2008). Psychotherapy for depression in adults: A meta-analysis of comparative outcome studies. *Journal of Consulting and Clinical Psychology, 76*, 909-922. doi:10.1037/a0013075

Cusack, J., Deane, F. P., Wilson, C. J., & Ciarrochi, J. (2006). Emotional expression, perceptions of therapy, and help-seeking intentions in men attending therapy services. *Psychology of Men & Masculinity, 7*, 69-82. doi:10.1037/1524-9220.7.2.69

Demyttenaere, K., Bruffaerts, R., Posada-Villa, J., Gasquet, I., Kovess, V., Lepine, J. P., . . . Chatterji, S. (2004). Prevalence, severity, and unmet need for treatment of mental disorders in the world health organization world mental health surveys. *JAMA, 291*, 2581-2590. doi:10.1001/jama.291.21.2581

Fabrega, H. J. (1973). Toward a model of illness behavior. *Medical Care, 11*, 470-484. doi:10.1097/00005650-197311000-00002

Fabrigar, L. R., & Wegener, D. T. (2010). Attitude structure. In R. F. Baumeister & E. J. Finkel (Eds.), *Advanced social psychology: The state of the science* (pp. 177-216). New York, NY: Oxford University Press.

Fischer, E. H., & Farina, A. (1970). Attitudes toward seeking professional psychological help: A shortened form and considerations for research. *Journal of College Student Development, 36*, 368-373. doi:10.1037/t05375-000

Fischer, E. H., & Turner, J. L. (1970). Orientations to seeking professional help: Development and research utility of an attitude scale. *Journal of Consulting and Clinical Psychology, 35*, 79-90. doi:10.1037/h0029636

Fishbein, M. (1967). A consideration of beliefs and their role in attitude measurement. In M. Fishbein (Ed.), *Readings in attitude theory and measurement* (pp. 257-266). New York: Wiley.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.

Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin, 111*, 455-474. doi:10.1037/0033-2909.111.3.455

Fletcher, T. D. (2012). QuantPsyc: Quantitative Psychology Tools. R package version 1.5. Retrieved from https://CRAN.R-project.org/package=QuantPsyc.

Gabriel, A., & Violato, C. (2010a). Depression literacy among patients and the public: A literature review. *Primary Psychiatry, 17*, 55-64.

Gabriel, A., & Violato, C. (2010b). The development and psychometric assessment of an instrument to measure attitudes towards depression and its treatments in patients suffering from non-psychotic depression. *Journal of Affective Disorders, 124*, 241-249. doi:10.1016/j.jad.2009.11.009

Gammage, K. L., & Klentrou, P. (2011). Predicting osteoporosis prevention behaviors: Health beliefs and knowledge. *American Journal of Health Behavior, 35*, 371-382. doi:10.5993/ajhb.35.3.10

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2008). Health behavior and Health Education: Theory, Research, and Practice (4th ed.). San Francisco, CA: Jossey-Bass.

Gorczynski, P., Sims-schouten, W., Hill, D., & Wilson, J. C. (2017). Examining mental health literacy, help seeking behaviours, and mental health outcomes in UK university students. *The Journal of Mental Health Training, Education and Practice, 12*, 111-120. doi:10.1108/jmhtep-05-2016-0027

Gulliver, A., Griffiths, K. M., & Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry, 10*, 113-121. doi:10.1186/1471-244X-10-113

Gum, A. M., Iser, L., & Petkus, A. (2010). Behavioral health service utilization and preferences of older adults receiving home-based aging services. *American Journal of Geriatric Psychiatry, 18*, 491-501. doi:10.1097/JGP.0b013e3181c29495

Hammer, J. H., Spiker, D. A., & Perrin, P. B. (2019). Physician referral to a psychologist: Testing alternative behavioral healthcare seeking models. *Journal of Clinical Psychology, 75*, 726-741. doi:10.1002/jclp.22729

Harrison, J. A., Mullem, P. D., & Green, L. W. (1992). A meta-analysis of studies of the health belief model with adults. *Health Education Research: Theory & Practice, 7*, 107-116. doi:10.1093/her/7.1.107

Henderson, C., Evans-Lacko, S., & Thornicroft, G. (2013). Mental illness stigma, help seeking, and public health programs. *American Journal of Public Health, 103*, 777-780. doi:10.2105/AJPH.2012.301056

Henshaw, E. J., & Freedman-Doan, C. R. (2009). Conceptualizing mental health care utilization using the Health Belief Model. *Clinical Psychology: Science and Practice, 16*, 420-439. doi: 10.1111/j.1468-2850.2009.01181.x

Hess, T. R., & Tracey, T. J. G. (2013). Psychological help-seeking intention among college students across three problem areas. *Journal of Counseling & Development, 91*, 321-330. doi:10.1002/j.1556-6676.2013.00100.x

Hochbaum, G. M. (1958). *Public participation in medical screening programs: A socio-psychological study*. Washington, D.C.: U.S. Dept. of Health, Education, and Welfare.

Holmes, E. A., Hughes, D. A., & Morrison, V. L. (2014). Predicting adherence to medications using health psychology theories: a systematic review of 20 years of empirical research. *Value in Health, 17*, 863-876. doi:10.1016/j.jval.2014.08.2671

Hunt, J., & Eisenberg, D. (2010). Mental health problems and help-seeking behavior among college students. *Journal of Adolescent Health, 46*, 3-10. doi:10.1016/j.jadohealth.2009.08.008

Ingham, J. G., & Miller, P. M. (1986). Self-referral to primary care: Symptoms and social factors. *Journal of Psychosomatic Research, 30*, 49-56. doi: 10.1016/0022-3999(86)90065-6

Insel, T. R. (2008). Assessing the economic costs of serious mental illness. *American Journal of Psychiatry, 165*, 663-665. doi: 10.1176/appi.ajp.2008.08030366

Jorm, A. F. (2012). Mental health literacy: empowering the community to take action for better mental health. *American Psychologist, 67*, 231-243. doi:10.1037/a0025957

Kahn, J. H., & Williams, M. N. (2003). The impact of prior counseling on predictors of college counseling center use. *Journal of College Counseling, 6*, 144-154. doi: 10.1002/j.2161-1882.2003.tb00235.x

Kakhnovets, R. (2011). Relationships among personality, expectations about counseling, and help-seeking attitudes. *Journal of Counseling & Development, 89*, 11-19. doi:10.1002/j.1556-6678.2011.tb00056.x

Kazdin, A. E. (2017). Addressing the treatment gap: A key challenge for extending evidence-based psychosocial interventions. *Behavior Research and Therapy, 88*, 7-18. doi:10.1016/j.brat.2016.06.004

Kelly, A. E., & Achter, J. A. (1995). Self-concealment and attitudes toward counseling in university students. *Journal of Counseling Psychology, 42*, 40-46. doi: 10.1037//0022-0167.42.1.40

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., . . . Wang, P. S. (2011). The global burden of mental disorders: An update from the WHO World Mental Health (WMH) Surveys. *Epidemiology and Psychiatric Sciences, 18*, 23-33. doi:10.1017/s1121189x00001421

Kessler, R. C., Angermeyer, M. C., Anthony, J. C., de Graaf, R., Demyttenaere, K., Gasquet, I., . . . Üstün, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey initiative. *World Psychiatry, 6*, 168-176.

Kessler, R. C., Heeringa, S., Lakoma, M. D., Petukhova, M., Rupp, A. E., Schoenbaum, M., . . . Zaslavsky, A. M. (2008). Individual and societal effects of mental disorders on earnings in the United States: Results from the national comorbidity survey replication. *American Journal of Psychiatry, 165*, 703-711. doi: 10.1176/appi.ajp.2008.08010126

Kessler, R. C., & Merikangas, K. R. (2004). The national comobidity survey replication (NCS-R): Background and aims. *International Journal of Methods in Psychiatric Research, 13*, 60-68. doi: 10.1002/mpr.166

Kim, B. S. K., & Omizo, M. M. (2003). Asian cultural values, attitudes toward seeking professional psychological help, and willingness to see a counselor. *The Counseling Psychologist, 31*, 343-361. doi:10.1177/0011000003252268

Kim, J. E., & Zane, N. (2016). Help-seeking intentions among Asian American and White American students in psychological distress: Application of the health belief model. *Cultural Diversity and Ethnic Minority Psychology, 22*, 311-321. doi:10.1037/cdp0000056

Kim, P. Y., & Kendall, D. L. (2015). Etiology beliefs moderate the influence of emotional self-control on willingness to see a counselor through help-seeking attitudes among Asian American students. *Journal of Counseling Psychology, 62*, 148-158. doi: 10.1037/cou0000015

Kim, P. Y., & Park, I. J. (2009). Testing a multiple mediation model of Asian American college students' willingness to see a counselor. *Cultural Diversity and Ethnic Minority Psychology, 15*, 295-302. doi:10.1037/a0014396

King, K. A., Vidourek, R. A., & Strader, J. L. (2008). University students' perceived self-efficacy in identifying suicidal warning signs and helping suicidal friends find campus intervention resources. *Suicide and Life-Threatening Behavior, 38*, 608-617. doi:10.1521/suli.2008.38.5.608

Kohn, R., Saxena, S., Levav, I., & Saraceno, B. (2004). The treatment gap in mental health care. *Bulletin of the World Health Organization, 82*, 858-866.

Koydemir-Özden, S., & Erel, Ö. (2010). Psychological help-seeking: Role of socio-demographic variables, previous help-seeking experience and presence of a problem. *Procedia - Social and Behavioral Sciences, 5*, 688-693. doi:10.1016/j.sbspro.2010.07.166

Kutcher, S., Wei, Y., & Coniglio, C. (2016). Mental health literacy: Past, present, and future. *Canadian Journal of Psychiatry, 61*, 154-158. doi:10.1177/0706743715616609

Langley, E. L., Wootton, B. M., & Grieve, R. (2017). The utility of the health belief model variables in predicting help-seeking intention for anxiety disorders. *Australian Psychologist, 53,* 291-301. doi:10.1111/ap.12334

869. doi:10.1080/10705511.2017.1363652

Linke, S. E., Robinson, C. J., & Pekmezi, D. (2013). Applying psychological theories to promote healthy lifestyles. *American Journal of Lifestyle Medicine, 8*, 4-14. doi:10.1177/1559827613487496

Mackenzie, C. S., Erickson, J., Deane, F. P., & Wright, M. (2014). Changes in attitudes toward seeking mental health services: A 40-year cross-temporal meta-analysis. *Clinical Psychology Review, 34*, 99-106. doi:10.1016/j.cpr.2013.12.001

Mackenzie, C. S., Gekoski, W. L., & Knox, V. J. (2006). Age, gender, and the underutilization of mental health services: The influence of help-seeking attitudes. *Aging & Mental Health, 10*, 574-582. doi:10.1080/13607860600641200

Mackenzie, C. S., Pagura, J., & Sareen, J. (2010). Correlates of perceived need for and use of mental health services by older adults in the collaborative psychiatric epidemiology surveys. *American Journal of Geriatric Psychiatry, 18*, 1103-1115. doi:10.1097/JGP.0b013e3181dd1c06

Mak, H. W., & Davis, J. M. (2014). The application of the theory of planned behavior to help-seeking intention in a Chinese society. *Social Psychiatry and Psychiatric Epidemiology, 49,* 1501-1515. doi:10.1007/s00127-013-0792-x

Mantler, T. (2012). A systematic review of smoking youths' perceptions of addiction and health risks associated with smoking: Utilizing the framework of the health belief model. *Addiction Research & Theory, 21*, 306-317. doi:10.3109/16066359.2012.727505

McGuire, T. G., & Miranda, J. (2008). New evidence regarding racial and ethnic disparities in mental health: Policy implications. *Health Affairs, 27*, 393-403. doi:10.1377/hlthaff.27.2.393

Mechanic, D. (1962a). The concept of illness behavior. *Journal of Chronic Disease, 15*, 189-194. doi:10.1016/0021-9681(62)90068-1

Mechanic, D. (1962b). *Students under stress: A study of the social psychology of adaptation*. New York, NY: Free Press.

Mechanic, D. (1966). Response factors in illness: The study of illness behavior. *Social Psychiatry, 1*, 11-20. doi: 10.1007/bf00583824

Mechanic, D. (1976). Stress, illness, and illness behavior. *Journal of Human Stress, 2*(2), 2-6. doi:10.1080/0097840X.1976.9936061

Mechanic, D. (1982). The epidemiology of illness behavior and its relationship to physical and psychological distress. In D. Mechanic (Ed.), *Symptoms, illness behavior, and help-seeking* (pp. 1-24). New York, NY: Prodist.

Mechanic, D. (1992). Health and illness behavior and patient-practitioner relationships. *Social Science & Medicine, 34*, 1345-1350. doi: 10.1016/0277-9536(92)90143-e

Mendenhall, A. N., Jackson, S. C., & Hase, S. (2013). Mental health first aid USA in a rural community: perceived impact on knowledge, attitudes, and behavior. *Social Work in Mental Health, 11*, 563-577. doi:10.1080/15332985.2013.812542

Mo, P. K., & Mak, W. W. (2009). Help-seeking for mental health problems among Chinese: The application and extension of the theory of planned behavior. *Social Psychiatry and Psychiatric Epidemiology, 44*, 675-684. doi:10.1007/s00127-008-0484-0

Mojtabai, R., Olfson, M., Sampson, N. A., Jin, R., Druss, B., Wang, P. S., . . . Kessler, R. C. (2011). Barriers to mental health treatment: Results from the National Comorbidity Survey Replication. *Psychological Medicine, 41*, 1751-1761. doi:10.1017/S0033291710002291

Möller-Leimkühler, A. M. (2002). Barriers to help-seeking by men: A review of sociocultural and clinical literature with particular reference to depression. *Journal of Affective Disorders, 71*, 1-9. doi: 10.1016/s0165-0327(01)00379-2

Nam, S. K., Chu, H. J., Lee, M. K., Lee, J. H., Kim, N., & M., L. S. (2010). A meta-analysis of gender differences in attitudes toward seeking professional help. *Journal of American College Health, 59*, 110-116. doi: 10.1080/07448481.2010.483714.

Nobiling, B. D., & Maykrantz, S. A. (2017). Exploring perceptions about and behaviors related to mental illness and mental health service utilization among college students using the health belief model (HBM). *American Journal of Health Education, 48*, 306-319. doi:10.1080/19325037.2017.1335628

Noone, J. H., & Stephens, C. (2008). Men, masculine identities, and health care utilisation. *Sociology of Health & Illness, 30*, 711-725. doi: 10.1111/j.1467-9566.2008.01095.x

O'Connor, P. J., Martin, B., Weeks, C. S., & Ong, L. (2014). Factors that influence young people's mental health help-seeking behaviour: a study based on the Health Belief Model. *Journal of Advanced Nursing, 70*, 2577-2587. doi:10.1111/jan.12423

O'Connor, M., Casey, L., & Clough, B. (2014). Measuring mental health literacy: A review of scaled-based measures. *Journal of Mental Health, 23*, 197-204. doi:0.3109/09638237.2014.910646

Park, D. Y. (2011). Utilizing the Health Belief Model to predicting female middle school students' behavioral intention of weight reduction by weight status. *Nutrion Research and Practice, 5*, 337-348. doi:10.4162/nrp.2011.5.4.33th: Issues and potential applications. *Journal of Mental Health, 17*, 559-564. doi:10.1080/09638230802523047

Picco, L., Abdin, E., Chong, S. A., Pang, S., Vaingankar, J. A., Sagayadevan, V., . . . Subramaniam, M. (2016). Beliefs about help seeking for mental disorders: Findings from

a mental health literacy study in Singapore. *Psychiatric Services, 67*, 1246-1253. doi:10.1176/appi.ps.201500442

Plotnikoff, R. C., Costigan, S. A., Karunamuni, N., & Lubans, D. R. (2013). Social cognitive theories used to explain physical activity behavior in adolescents: A systematic review and meta-analysis. *Preventative Medicine, 56*, 245-253. doi:10.1016/j.ypmed.2013.01.013

Radisic, G., Chapman, J., Flight, I., & Wilson, C. (2017). Factors associated with parents' attitudes to the HPV vaccination of their adolescent sons : A systematic review. *Preventative Medicine, 95*, 26-37. doi:10.1016/j.ypmed.2016.11.019

Reavley, N. J., & Jorm, A. F. (2011a). Recognition of mental disorders and beliefs about treatment and outcome: Findings from an Australian national survey of mental health literacy and stigma. *Australian and New Zealand Journal of Psychiatry, 45*, 947-956. doi:10.3109/00048674.2011.621060

Reavley, N. J., & Jorm, A. F. (2011b). Young people's recognition of mental disorders and beliefs about treatment and outcome: Findings from an Australian national survey. *Australian and New Zealand Journal of Psychiatry, 45*, 890-898. doi:10.3109/00048674.2011.614215

Reid, A. E., & Aiken, L. S. (2011). Integration of five health behaviour models: common strengths and unique contributions to understanding condom use. *Psychology and Health, 26*, 1499-1520. doi:10.1080/08870446.2011.572259

Rickwood, D. J., & Braithwaite, V. A. (1994). Social-psychological factors affecting help-seeking for emotional problems. *Social Science & Medicine, 39*, 563-572. doi: 10.1016/0277-9536(94)90099-x

Rickwood, D. J., & Thomas, K. A. (2012). Conceptual measurement framework for help-seeking for mental health problems. *Psychology Research and Behavior Management, 5,* 173-183. doi: 10.2147/PRBM.S38707

Rosenstock, I. M. (1974). Historical origins of the Health Belief Model. *Health Education Monographs, 2*, 328-335. doi:10.1177/109019817400200403

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education & Behavior, 15*, 175-183. doi:10.1177/109019818801500203

Roy-Byrne, P. P., Stang, P., Wittchen, H.-U., Ustun, B., Walters, E. E., & Kessler, R. C. (2000). Lifetime panic-depression comorbidity in the national comorbidity survey: Association with symptoms, impairments, course and help-seeking. *British Journal of Psychiatry, 176*, 229-235. doi: 10.1192/bjp.176.3.229

Rüsch, N., Evans-Lacko, S., Henderson, C., Flach, C., & Thornicroft, G. (2011). Knowledge and attitudes as predictors of intentions to seek help for and disclose a mental illness. *Psychiatric Services, 62*, 675-678. doi: 10.1055/s-0031-1277794

Schnyder, N., Panczak, R., Groth, N., & Schultze-Lutter, F. (2017). Association between mental health-related stigma and active help-seeking: Systematic review and meta-analysis. *British Journal of Psychiatry, 210*, 261-268. doi:10.1192/bjp.bp.116.189464

Schomerus, G., Appel, K., Meffert, P. J., Luppa, M., Andersen, R. M., Grabe, H. J., & Baumeister, S. E. (2013). Personality-related factors as predictors of help-seeking for depression: A population-based study applying the Behavioral Model of Health Services Use. *Social Psychiatry and Psychiatric Epidemiology, 48*, 1809-1817. doi:10.1007/s00127-012-0643-1

Schomerus, G., Matschinger, H., & Angermeyer, M. C. (2009). Attitudes that determine willingness to seek psychiatric help for depression: A representative population survey applying the Theory of Planned Behaviour. *Psychological Medicine, 39*, 1855-1865. doi:10.1017/S0033291709005832

Shaffer, P. A., Vogel, D. L., & Wei, M. (2006). The mediating roles of anticipated risks, anticipated benefits, and attitudes on the decision to seek professional help: An attachment perspective. *Journal of Counseling Psychology, 53*, 442-452. doi:10.1037/0022-0167.53.4.442

Skogstad, P., Deane, F. P., & Spicer, J. (2006). Social-cognitive determinants of help-seeking for mental health problems among prison inmates. *Criminal Behavior and Mental Health, 16*, 43-59. doi:10.1002/cbm.54

Steinfeldt, J. A., England, B., Speight, Q. L., & Steinfeldt, M. C. (2009). Gender role conflict and help-seeking stigma among college football players. *Psychology of Men & Masculinity, 10*, 261-272. doi: 10.1037/a0017223

Steinmetz, H., Knappstein, M., Ajzen, I., Schmidt, P., & Kabst, R. (2016). How effective are behavior change interventions based on the theory of planned behavior? *Zeitschrift für Psychologie, 224*, 216-233. doi:10.1027/2151-2604/a000255

Suchman, E. A. (1965). Social patterns of illness and medical care. *Journal of Health and Human Behavior, 6*, 2-16. doi: 10.2307/2948614

Sylwestrzak, A., Overholt, C. E., Ristau, K. I., & Coker, K. L. (2015). Self-reported barriers to treatment engagement: Adolescent perspectives from the National Comorbidity Survey-Adolescent Supplement (NCS-A). *Community Mental Health Journal, 51*, 775-781. doi:10.1007/s10597-014-9776-x

ten Have, M., de Graaf, R., Vollebergh, W., & Beekman, A. (2004). What depressive symptoms are associated with the use of care services? *Journal of Affective Disorders, 80*, 239-248. doi:10.1016/s0165-0327(03)00132-0

Thompson, A., Hunt, C., & Issakidis, C. (2004). Why wait? Reasons for delay and prompts to seek help for mental health problems in an Australian clinical sample. *Social Psychiatry and Psychiatric Epidemiology, 39*, 810-817. doi:10.1007/s00127-004-0816-7

van Zoonen, K., Kleiboer, A., Beekman, A. T., Smit, J. H., Boerema, A. M., & Cuijpers, P. (2015). Reasons and determinants of help-seeking in people with a subclinical depression. *Journal of Affective Disorders, 173*, 105-112. doi:10.1016/j.jad.2014.10.062

VandenBos, G. R. (Ed.) (2015). *APA Dictionary of Psychology* (2nd ed.). Washington, DC, US: American Psychological Association.

Vogel, D. L., & Armstrong, P. I. (2010). Self-concealment and willingness to seek counseling for psychological, academic, and career issues. *Journal of Counseling & Development, 88*, 387-397. doi: 10.1002/j.1556-6678.2010.tb00038.x

Vogel, D. L., Gentile, D. A., & Kaplan, S. A. (2008). The influence of television on willingness to seek therapy. *Journal of Clinical Psychology, 64*, 276-295. doi:10.1002/jclp.20446

Vogel, D. L., Wade, N. G., & Hackler, A. H. (2008). Emotional expression and the decision to seek therapy: The mediating roles of the anticipated benefits and risks. *Journal of Social and Clinical Psychology, 27*, 254-278. doi: 10.1521/jscp.2008.27.3.254

Vogel, D. L., Wade, N. G., Wester, S. R., Larson, L., & Hackler, A. H. (2007). Seeking help from a mental health professional: The influence of one's social network. *Journal of Clinical Psychology, 63*, 233-245. doi:10.1002/jclp.20345

Vogel, D. L., & Wei, M. (2005). Adult attachment and help-seeking intent: The mediating roles of psychological distress and perceived social support. *Journal of Counseling Psychology, 52*, 347-357. doi:10.1037/0022-0167.52.3.347

Vogel, D. L., & Wester, S. R. (2003). To seek help or not to seek help: The risks of self-disclosure. *Journal of Counseling Psychology, 50*, 351-361. doi:1037/0022-0167.50.3.351

Vogel, D. L., Wester, S. R., Wei, M., & Boysen, G. A. (2005). The role of outcome expectations and attitudes on decisions to seek professional help. *Journal of Counseling Psychology, 52*, 459-470. doi: 10.1037/0022-0167.52.4.459

Wang, P. S., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Borges, G., Bromet, E. J., . . . Wells, J. E. (2007). Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. *The Lancet, 370*(9590), 841-850. doi:10.1016/s0140-6736(07)61414-7

Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the United States. *Archives of General Psychiatry, 62*, 629-640. doi: 10.1001/archpsyc.62.6.629

Wei, Y., McGrath, P. J., Hayden, J., & Kutcher, S. (2015). Mental health literacy measures evaluating knowledge, attitudes and help-seeking: A scoping review. *BMC Psychiatry, 15*, 291-311. doi:10.1186/s12888-015-0681-9

White, M. M., Clough, B. A., & Casey, L. M. (2018). What do help-seeking measures assess? Building a conceptualization framework for help-seeking intentions through a systematic review of measure content. *Clinical Psychology Review, 59*, 61-77. doi:10.1016/j.cpr.2017.11.001

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., . . . Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. *The Lancet, 382*(9904), 1575-1586. doi:10.1016/s0140-6736(13)61611-6

Whiteford, H. A., Ferrari, A. J., Degenhardt, L., Feigin, V., & Vos, T. (2015). The global burden of mental, neurological and substance use disorders: an analysis from the Global Burden of Disease Study 2010. *PLoS One, 10*(2), e0116820. doi:10.1371/journal.pone.0116820

Wilson, C. J., Deane, F. P., Ciarrochi, J., & Rickwood, D. J. (2005). Measuring help-seeking intentions: Properties of the General Help-Seeking Questionnaire. *Canadian Journal of Counselling, 39*, 15-28.

Wright, A., Jorm, A. F., Harris, M. G., & McGorry, P. D. (2007). What's in a name? Is accurate recognition and labelling of mental disorders by young people associated with better help-seeking and treatment preferences? *Social Psychiatry and Psychiatric Epidemiology, 42*, 244-250. doi:10.1007/s00127-006-0156-x

Yousaf, O., Grunfeld, E. A., & Hunter, M. S. (2015). A systematic review of the factors associated with delays in medical and psychological help-seeking among men. *Health Psychology Review*, 9, 264-276. doi:10.1080/17437199.2013.840954

Appendix B: Path Analyses Results

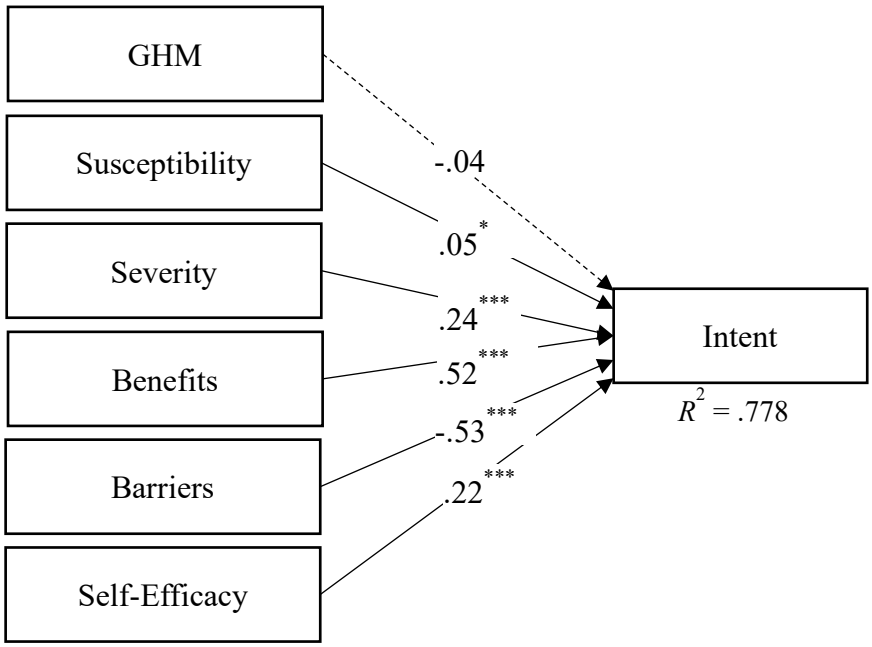

Figure 9. Model 4 Standardized solution. Covariances omitted for clarity.

Table 15

Model 4 Maximum Likelihood Estimates: Unstandardized and Standardized Effects, Standard Errors, Significance Level, and Confidence Intervals

					95% CI		
Direct Effects	*B*	β	*SE*	*p*	Lower	Upper	R^2
GHM -> Intent	-.060	-.035	.047	.203	-.153	.032	
Susceptibility -> Intent	.039	.053	.017	.024	.005	.073	
Severity -> Intent	.345	.239	.063	< .001	.221	.469	
Barriers -> Intent	-.583	-.533	.052	< .001	-.686	-.481	
Benefits -> Intent	1.009	.515	.062	< .001	.887	1.131	
Self-Efficacy -> Intent	.123	.221	.017	< .001	0.090	.156	.778

Note. B = unstandardized path coefficient, β = standardized path coefficient

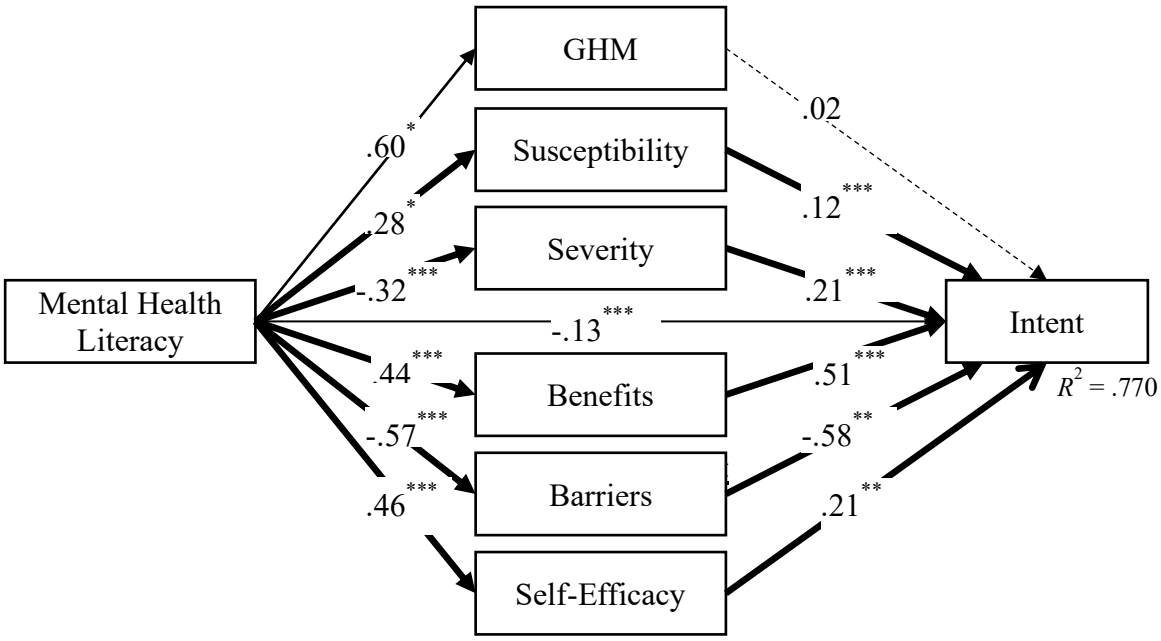

Figure 10. Model 5 standardized solution. Non-significant paths are dotted. Asterisks denote individually significant path coefficients (* $p < .05$, ** $p < .01$, *** $p < .001$). Error covariances have been omitted for clarity.

Table 16

Model 5 Maximum Likelihood Estimates: Unstandardized and Standardized Direct and Indirect Effects, Standard Errors, Significance Level, and Confidence Intervals

					95% CI		
Direct Effects	*B*	β	*SE*	*p*	Lower	Upper	R^2
GHM -> Intent	.026	.015	.051	.605	-.073	.125	
Susceptibility -> Intent	.087	.116	.020	< .001	.047	.126	
Severity -> Intent	.308	.209	.063	< .001	.185	.431	
Barriers -> Intent	-.643	-.582	.053	< .001	-.748	-.539	
Benefits -> Intent	1.004	.508	.061	< .001	.883	1.124	
Self-Efficacy -> Intent	.117	.209	.017	< .001	.084	.150	
MHL -> Intent	-.224	-.134	.051	< .001	-.323	-.124	.789
MHL -> GHM	.581	.594	.031	< .001	.520	.642	.352
MHL -> Susceptibility	.693	.311	.084	< .001	.528	.858	.097
MHL -> Severity	-.423	-.372	.042	< .001	-.506	-.341	.139
MHL -> Barriers	-.905	-.597	.048	< .001	-.999	-.810	.356
MHL -> Benefits	.373	.441	.030	< .001	.314	.433	.194
MHL -> Self-Efficacy	1.369	.458	.106	< .001	1.162	1.576	.210
Indirect Effects	*B*	β	*SE*	*p*	Lower	Upper	
MHL->GHM->Intent	.015	.009	.029	.606	-.042	.073	
MHL->Susceptibility->Intent	.060	.036	.016	< .001	.029	.091	
MHL->Severity->Intent	-.130	-.078	.030	< .001	-.188	-.072	
MHL->Barriers->Intent	.582	.347	.057	< .001	.469	.695	
MHL->Benefits->Int	.375	.224	.038	< .001	.300	.449	
MHL->Self-Efficacy->Intent	.160	.096	.026	< .001	.109	.211	
MHL Total Indirect Effect	1.062	.634	.063	< .001	.938	1.186	

Note. B = unstandardized path coefficient, β = standardized path coefficient

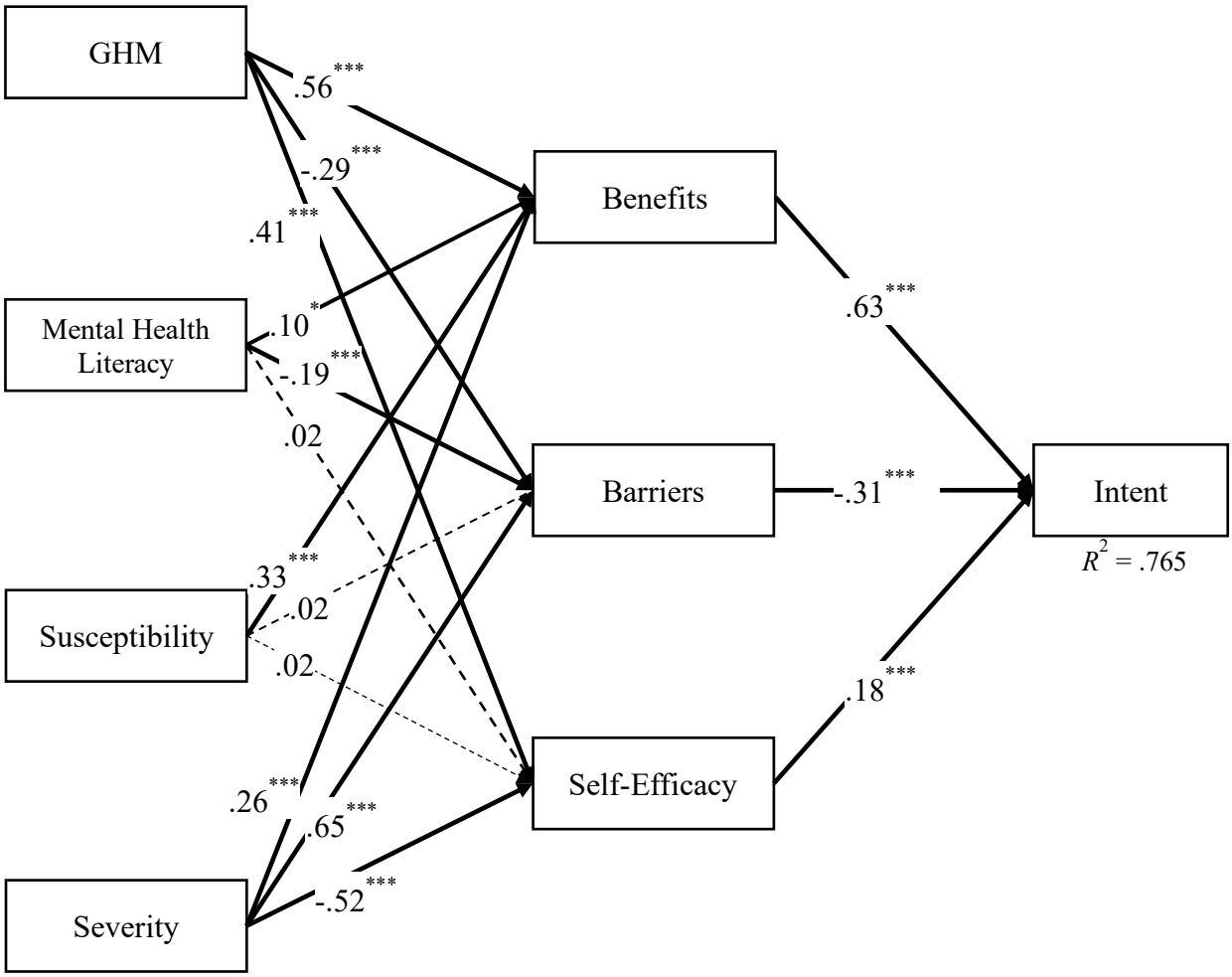

Figure 11. Model 5 standardized solution. Non-significant paths are dotted. Asterisks denote individually significant path coefficients (* $p < .05$, ** $p < .01$, *** $p < .001$). Error covariances have been omitted for clarity.

Table 17

Model 6 Maximum Likelihood Estimates: Unstandardized and Standardized Direct and Indirect Effects, Standard Errors, Significance Level, and Confidence Intervals

					95% CI		
Direct Effects	*B*	β	*SE*	*p*	Lower	Upper	R2
Benefits -> Intent	1.238	.632	.039	< .001	1.162	1.315	
Barriers -> Intent	-.341	-.311	.033	< .001	-.405	-.277	
Self-Efficacy -> Intent	.101	.182	.017	< .001	.069	.134	.765
GHM -> Benefits	.484	.557	.030	< .001	.425	.544	
MHL -> Benefits	.088	.104	.036	.014	.018	.159	
Susceptibility -> Benefits	.122	.325	.014	< .001	.096	.149	
Severity -> Benefits	.191	.260	.027	< .001	.140	.243	.555
GHM -> Barriers	-.447	-.287	.036	< .001	-.517	-.377	
MHL -> Barriers	-.290	-.192	.043	< .001	-.375	-.206	
Susceptibility -> Barriers	.011	.017	.016	0.490	-.021	.043	
Severity -> Barriers	.856	.650	.032	< .001	.794	.918	.803
GHM -> Self-Efficacy	1.257	.411	.106	< .001	1.050	1.464	
MHL -> Self-Efficacy	.052	.017	.127	.684	-.197	.300	
Susceptibility -> Self-Efficacy	.027	.020	.048	.579	-.068	.121	
Severity -> Self-Efficacy	-1.344	-.518	.093	< .001	-1.527	-1.161	.555
Direct Effects	*B*	β	*SE*	*p*	Lower	Upper	
GHM->Benefits->Intent	.600	.352	.042	< .001	.518	.681	
GHM->Barriers->Intent	.152	.089	.019	< .001	.115	.189	
GHM->Self-Efficacy->Intent	.127	.075	.024	< .001	.081	.173	
GHM Total Indirect Effect	.879	.517	.053	< .001	.776	.982	
MHL->Benefits->Intent	.109	.066	.045	.015	.022	.197	
MHL->Baarriers->Intent	.099	.060	.017	< .001	.065	.133	
MHL->Self-Efficacy->Intent	.005	.003	.013	.684	-.020	.030	
MHL Total Indirect Effect	.214	.129	.059	< .001	.098	.329	
Susceptibility->Benefits->Intent	.152	.205	.018	< .001	.117	.186	
Susceptibility->Barriers->Intent	-.004	-.005	.006	.491	-.015	.007	
Susceptibility->Self-Efficacy->Intent	.003	.004	.005	.580	-.007	.011	
Susceptibility Total Indirect Effect	.150	.204	.023	< .001	.106	.195	
Severity->Benefits->Intent	.237	.164	.034	< .001	.171	.303	
Severity->Barriers->Intent	-.292	-.202	.030	< .001	-.350	-.233	
Severity->Self-Efficacy->Intent	-.136	-.094	.024	< .001	-.184	-.088	
Severity Total Iindirect Effect	-.191	-.132	.048	< .001	-.285	-.096	
Total Indirect Effect	1.052	.717	.077	< .001	.900	1.204	

Note. B = unstandardized path coefficient, β = standardized path coefficient.

Appendix C

Informed Consent

Study Title **Mental Health Beliefs, Attitudes, and Knowledge**

Study Purpose and Rationale
The purpose of this study is to examine how people's beliefs about, attitudes towards, and knowledge of mental health and mental illness impact their use of mental health services. Previous research has found that the beliefs people have about mental health and mental illness can impact preventative and treatment behaviors related to mental health problems. This study aims to better understand what facilitates and what prevents people from getting mental health care when it is needed.

Inclusion/Exclusion Criteria
To be eligible to participate in this study you must be at least 18 years old.

Participation Procedures and Duration
Participation involves completing a computer-administered questionnaire. However, if you prefer, a pen-and-paper version of the questionnaire can be provided.

Data Confidentiality or Anonymity
All data will be maintained as anonymous and no identifying information such as names will appear in any publication or presentation of the data.

Storage of Data and Data Retention Period
Data collected will be stored and maintained by the primary investigator on a password protected computer in an encrypted file.

Risks or Discomforts
Some questions may potentially make respondents reflect on their own experiences or close others' experiences with mental illness and may subsequently experience mild emotional discomfort while completing the questionnaire.

Who to Contact Should You Experience Any Negative Effects from Participating in this Study

If you are a student: University Counseling Center Contact the Counseling Center at 765-285-1736 or stop by Lucina Hall, Room 320 between 8:00 a.m. and 5:00 p.m., Monday through Friday.
If you are not a Ball State student
Please contact your Pimary Care Physcian or General Practitioner, your established mental health care provider, or contact the SAMHSA Behavioral Health National Help Line at: 1-800-662-HELP (4357)
1-800-487-4889 (TTY)

Free and confidential information in English and Spanish for individuals and family members facing substance abuse and mental health issues. 24 hours a day, 7 days a week.

Benefits

Participants may gain new insight into their mental health beliefs and their possible need for consultation with a mental health care provider.

Voluntary Participation

Your participation in this study is completely voluntary and you are free to withdraw your permission at anytime for any reason without penalty or prejudice from the investigator. Please feel free to ask any questions of the investigator before signing this form and at any time during the study.

IRB Contact Information

For questions about your rights as a research subject, please contact the Director, Office of Research Integrity, Ball State University, Muncie, IN 47306, (765) 285-5070 or at irb@bsu.edu.

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By clicking “accept” below you agree to participate in this research project entitled, Mental Health Beliefs, Attitudes, and Knowledge, I have had the study explained to me and my questions have been answered to my satisfaction. I have read the description of this project and give my consent to participate. I understand that I can receive a copy of this informed consent form to keep for future reference by contacted the primary investigator (above).

To the best of my knowledge, I meet the inclusion/exclusion criteria for participation (described above) in this study.

Appendix D

Kessler Psychological Distress Scale (K-6)

The following questions ask about how you have been feeling during **the past 30 days**. For each question, please circle the number that best describes how often you had this feeling.

During the past 30 days, about how often did you feel…	**All of the time**	**Most of the time**	**Some of the time**	**A Little of the time**	**None of the time**
1. …nervous?	☐	☐	☐	☐	☐
2. …hopeless?	☐	☐	☐	☐	☐
3. …restless or fidgety?	☐	☐	☐	☐	☐
4. …so depressed that nothing could cheer you up?	☐	☐	☐	☐	☐
5. …that everything was an effort?	☐	☐	☐	☐	☐
6. …worthless?	☐	☐	☐	☐	☐

Appendix E

Beliefs About Psychological Services (BAPS)

Instructions: Please rate the following statements using the scale provided. Place your ratings to the left of each statement by recording the number that most accurately reflects your attitudes and beliefs about seeking psychological services. There are no "wrong" answers, just rate the statements as you honestly feel or believe. It is important that you answer every item.

Strongly Disagree					**Strongly Agree**
1	2	3	4	5	6

___	1. If a good friend asked my advice about a serious problem, I would recommend that he/she see a psychologist.
___	2. I would be willing to confide my intimate concerns to a psychologist.
___	3. Seeing a psychologist is helpful when you are going through a difficult time in your life.
___	4. At some future time, I might want to see a psychologist.
___	5. I would feel uneasy going to a psychologist because of what some people might think.
___	6. If I believed I were having a serious problem, my first inclination would be to see a psychologist.
___	7. Because of their training, psychologists can help you find solutions to your problems.
___	8. Going to a psychologist means that I am a weak person.
___	9. Psychologists are good to talk to because they do not blame you for the mistakes you have made.
___	10. Having received help from a psychologist stigmatizes a person's life.
___	11. There are certain problems that should not be discussed with a stranger such as a psychologist.
___	12. I would see a psychologist if I were worried or upset for a long period of time.
___	13. Psychologists make people feel that they cannot deal with their problems.
___	14. It is good to talk to someone like a psychologist because everything you say is confidential.
___	15. Talking about problems with a psychologist strikes me as a poor way to get rid of emotional conflicts.
___	16. Psychologists provide valuable advice because of their knowledge about human behavior.
___	17. It is difficult to talk about personal issues with highly educated people such as psychologists.
___	18. If I thought I needed psychological help, I would get this help no matter who knew I was receiving assistance.

Appendix F

Health Beliefs about Mental Illness Scale (HBMI)

For the following questions, you are asked to respond using the scale to the right.	**Strongly Disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly Agree**
1. I feel it is important to carry out activities which improve my emotional health.	☐	☐	☐	☐	☐
2. I have regular health check-ups even when I am not sick.	☐	☐	☐	☐	☐
3. I eat well balanced meals	☐	☐	☐	☐	☐
4. Maintaining good emotional health is extremely important to me.	☐	☐	☐	☐	☐
5. I want to recognize emotional problems early.	☐	☐	☐	☐	☐
6. I search for new information to improve my emotional health.	☐	☐	☐	☐	☐
7. It is extremely likely that I will have mental health problems in the future.	☐	☐	☐	☐	☐
8. My chances of having mental health problems are great.	☐	☐	☐	☐	☐
9. I am more likely than the average person to have mental health problems.	☐	☐	☐	☐	☐
10. There is a good possibility that I will develop mental health problems in the next 10 years.	☐	☐	☐	☐	☐

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
11. I feel I will develop mental health problems in the future.	☐	☐	☐	☐	☐
12. Mental health problems would threaten my relationship with family and/or friends.	☐	☐	☐	☐	☐
13. Thinking about mental health problems makes me nervous.	☐	☐	☐	☐	☐
14. The thought of having mental health problems scares me.	☐	☐	☐	☐	☐
15. If I had mental health problems, my whole life would change.	☐	☐	☐	☐	☐
16. I am afraid to think about mental health problems.	☐	☐	☐	☐	☐
17. If I developed mental health problems, I would not live as long as the average person.	☐	☐	☐	☐	☐
18. Difficulties I would experience with mental health problems would last a long time.	☐	☐	☐	☐	☐
19. Getting help for mental health problems would prevent major problems with family and friends.	☐	☐	☐	☐	☐
20. Getting help for mental health problems would increase my ability to function at home, work, and/or school.	☐	☐	☐	☐	☐
21. Getting help for mental health problems would make me feel better about myself.	☐	☐	☐	☐	☐

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
22. A burden would be lifted off me if I were to get help for mental health problems.	☐	☐	☐	☐	☐
23. Getting help for mental health problems is embarrassing.	☐	☐	☐	☐	☐
24. Getting help for mental health problems would cost too much money.	☐	☐	☐	☐	☐
25. Getting help for mental health problems would take too much time.	☐	☐	☐	☐	☐
26. Health professionals would not understand someone like me if I went to them for mental health problems.	☐	☐	☐	☐	☐
27. People would think differently about me if I were to get help for mental health problems.	☐	☐	☐	☐	☐

Appendix G

Self-Efficacy in Seeking Mental Health Care (SE-SMHC)

Below are several statements about your confidence in your ability to seek mental health care **if you ever needed it**. For each statement, rate how confident you are from 1= no confidence to 10= complete confidence in your ability to do each behavior. There are no right or wrong answers. We are interested in how you see yourself and your own abilities.

	No confidence									**Complete confidence**
1. Find a place to get mental health treatment.	1	2	3	4	5	6	7	8	9	10
2. Get transportation to a mental health care service.	1	2	3	4	5	6	7	8	9	10
3. Clearly tell the staff what is troubling me.	1	2	3	4	5	6	7	8	9	10
4. Understand the information given to me by the staff	1	2	3	4	5	6	7	8	9	10
5. Be able to follow the treatment recommendations made by the staff.	1	2	3	4	5	6	7	8	9	10
6. Cope well with the consequences of seeking care (for example, treatments, tests, hospitalizations).	1	2	3	4	5	6	7	8	9	10
7. Cope well with my family and friends reactions to me seeking mental health treatment.	1	2	3	4	5	6	7	8	9	10
8. Cope well with the attitudes that the staff may have towards me.	1	2	3	4	5	6	7	8	9	10
9. Overcome any embarrassment I may have about seeking mental health treatment.	1	2	3	4	5	6	7	8	9	10

Appendix H

Mental Health Literacy Scale (MHLS)

The purpose of these questions is to gain an understanding of your knowledge of various aspects to do with mental health. When responding, we are interested in your degree of knowledge. Therefore, when choosing your response, consider that:

Very Unlikely = I am certain that it is NOT likely
Unlikely = I think it is unlikely but am not certain
Likely = I think it is likely but am not certain
Very Likely = I am certain that it IS very likely

1. If someone became extremely nervous or anxious in one or more situations with other people (such as at a party) or performance situations (e.g., presenting at a meeting) in which they were afraid of being evaluated by others and that they would act in a way that was humiliating or feel embarrassed, then to what extent do you think it is likely they have **Social Phobia**?

Very unlikely **Unlikely** **Likely** **Very Likely**

2. If someone experienced excessive worry about a number of events or activities where this level of concern was not warranted, had difficulty controlling this worry and had physical symptoms such as having tense muscles and feeling fatigued then to what extent do you think it is likely they have **Generalized Anxiety Disorder**?

Very unlikely **Unlikely** **Likely** **Very Likely**

3. If someone experienced a low mood for two or more weeks, had a loss of pleasure or interest in their normal activities and experienced changes in their appetite and sleep then to what extent do you think it is likely they have **Major Depressive Disorder?**

Very unlikely **Unlikely** **Likely** **Very Likely**

4. To what extent do you think it is likely that **Personality Disorders** are a category of mental illness?

Very unlikely **Unlikely** **Likely** **Very Likely**

5. To what extent do you think it is likely that **Dysthymia** is a disorder?

Very unlikely **Unlikely** **Likely** **Very Likely**

6. To what extent do you think it is likely that the diagnosis of **Agoraphobia** includes anxiety about situations where escape may be difficult or embarrassing?

Very unlikely **Unlikely** **Likely** **Very Likely**

7. To what extent do you think it is likely that the diagnosis of **Bipolar Disorder** includes experiencing periods of elevated (i.e., high) and periods of depressed (i.e., low) mood?

Very unlikely **Unlikely** **Likely** **Very Likely**

8. To what extent do you think it is likely that the diagnosis of **Drug Dependence** includes physical and psychological tolerance of the drug (i.e. require more of the drug to get the same effect)?

Very unlikely **Unlikely** **Likely** **Very Likely**

9. To what extent do you think that it is likely that in general in the United States, **women are MORE likely to experience a mental illness of any kind compared to men?**

Very unlikely **Unlikely** **Likely** **Very Likely**

10. To what extent do you think it is likely that in general, in the United States, **men are MORE likely to experience an anxiety disorder compared to women?**

Very unlikely **Unlikely** **Likely** **Very Likely**

When choosing your response, consider that:

- **Very Unhelpful** = I am certain that it is NOT helpful
- **Unhelpful** = I think it is unhelpful but am not certain
- **Helpful** = I think it is helpful but am not certain
- **Very Helpful** = I am certain that it IS very helpful

11. To what extent do you think it would be helpful for someone to **improve their quality of sleep** if they were having difficulties managing their emotions (e.g., becoming very anxious or depressed)?

Very Unhelpful **Unhelpful** **Helpful** **Very Helpful**

12. To what extent do you think it would be helpful for someone to **avoid all activities or situations that made them feel anxious** if they were having difficulties managing their emotions?

Very Unhelpful **Unhelpful** **Helpful** **Very Helpful**

When choosing your response, consider that:

- **Very unlikely** = I am certain that it is NOT likely
- **Unlikely** = I think it is unlikely but am not certain
- **Likely** = I think it is likely but am not certain
- **Very Likely** = I am certain that it IS very likely

13. To what extent do you think it is likely that **Cognitive Behavior Therapy (CBT)** is a therapy based on challenging negative thoughts and increasing helpful behaviors?

Very unlikely **Unlikely** **Likely** **Very Likely**

Mental health professionals are bound by confidentiality; however, there are certain conditions under which this does not apply.

To what extent do you think it is likely that the following is a condition that would allow a mental health professional to **break confidentiality**:

14. *If you are at immediate risk of harm to yourself or others*

Very unlikely **Unlikely** **Likely** **Very Likely**

15. *If your problem is not life-threatening and they want to assist others to better support you*

Very unlikely **Unlikely** **Likely** **Very Likely**

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly Agree**
16. I am confident that I know where to seek information about mental illness	□	□	□	□	□
17. I am confident using the computer or telephone to seek information about mental illness	□	□	□	□	□
18. I am confident attending face to face appointments to seek information about mental illness (e.g., seeing my primary care physician)	□	□	□	□	□

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree
19. I am confident I have access to resources (e.g., primary care physician, internet, friends) that I can use to seek information about mental illness	□	□	□	□	□
20. People with a mental illness could snap out of it if they wanted	□	□	□	□	□
21. A mental illness is a sign of personal weakness	□	□	□	□	□
22. A mental illness is not a real medical illness	□	□	□	□	□
23. People with a mental illness are dangerous	□	□	□	□	□
24. It is best to avoid people with a mental illness so that you don't develop this problem	□	□	□	□	□
25. If I had a mental illness I would not tell anyone.	□	□	□	□	□
26. Seeing a mental health professional means you are not strong enough to manage your own difficulties	□	□	□	□	□
27. If I had a mental illness, I would not seek help from a mental health professional	□	□	□	□	□
28. I believe treatment for a mental illness, provided by a mental health professional, would not be effective	□	□	□	□	□

Please indicate to what extent you would be willing to engage in the following behaviors:

	Definitely unwilling	**Probably unwilling**	**Neither unwilling or willing**	**Probably willing**	**Definitely willing**
29. How willing would you be to move next door to someone with a mental illness?	☐	☐	☐	☐	☐
30. How willing would you be to spend an evening socializing with someone with a mental illness?	☐	☐	☐	☐	☐
31. How willing would you be to make friends with someone with a mental illness?	☐	☐	☐	☐	☐
32. How willing would you be to have someone with a mental illness start working closely with you on a job?	☐	☐	☐	☐	☐
33. How willing would you be to have someone with a mental illness marry into your family?	☐	☐	☐	☐	☐
34. How willing would you be to vote for a politician if you knew they had suffered a mental illness?	☐	☐	☐	☐	☐
35. How willing would you be to employ someone if you knew they had a mental illness?	☐	☐	☐	☐	☐

Appendix I

Demographics

What is your age?

_____

Country of citizenship?

__ United States
__ Other: _____

What is the highest degree or level of school you have completed? *If currently enrolled, highest degree receieved.*

__ 8th grade or less
__ Some high school, no diploma
__ High school degree, or equivalent
__ Some college, no degree
__ Trade/technical/vocational training
__ Associate degree
__ Bachelors degree
__ Masters degree
__ Professional degree
__ Doctorate degree

How do you identify?

__ Male
__ Female
__ Transgender (M -> FM)
__ Transgender (FM -> M)
__ Gender non-binary
__ Other: _____

Sexual orientation:

__ Heterosexual or straight
__ Gay
__ Lesbian
__ Bisexual
__ Other: _____

Ethnicity, select all that apply.

__ Asian/Pacific Islander
__ Black or African American
__ Hispanic or Latino/a
__ Native American or American Indian
__ White or Caucasian
__ Other

What is your marital status

__ Single, never married
__ Single, previously married
__ Married or domestic partnership
__ Widowed
__ Divorced
__ Married but separated
__ In a relationship
__ In a relationship and cohabitating

How would you describe your household income growing up?

__ Lower class
__ Working class
__ Middle class
__ Upper-middle class
__ Upper class

How do you identify your worldview?

__ Protestant	__ Catholic	__ Mormon
__ Orthodox Christian	__ Jehovah's Witness	__ Other Christian:_____
__ Jewish	__ Muslim	__ Buddhist
__ Hindu	__ Non-religious	__ Atheist
__ Agnostic	__ Nothing in particular	__ Other, please specify

Have you previously been diagnosed with a mental illness by a mental health professional or a primary care physician?

___ Yes ___ No

Have you previously sought help (e.g. through counseling/therapy or medications) for a mental health concern of any kind?

___ Yes ___ No

If yes, how satisfied with this help were you?

Very unsatisfied					Very satisfied
1	2	3	4	5	6

Do you know anyone, such as a friend or family member, who has sought help (e.g. through counseling/therapy or medications) for a mental health concern of any kind?

__ Yes __ No

If yes, have these people been satisfied with the help they have received?

__ Yes __ No

Click the "Next" button to be forwarded to a separate form to enter an email that will be used to enter you into the drawing for an Amazon gift card.